Home Computing WEEKLY

An Argus Specialist Publication

No. 39
Nov 29 – Dec 5, 1983

38p

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More programs to type in for: Spectrum, Oric, Texas, VIC-20

AND: U.S. Scene, your letters . . .

Santa's going to be busy

With less than 25 shopping days to Christmas, the major computer retailers are already celebrating the biggest boom in home computer sales yet.

Asked how sales were going at Boots, Anton Boyes, merchandise controller, said: "Pretty fantastic! Fortunately we predicted the boom and we're in a reasonable stock position, so the main problem is how to cope with all the customers.

"Our staff are fairly overwhelmed with the demand. We're bringing in extra people, but we only have one computer consultant per branch, and they have their work cut out answering people's technical queries.

"Despite careful planning we are short of certain lines — the Spectrum, BBC B, and ZX81

Continued on page 5

'Ban these mail order addresses'

The Computer Trade Association is calling for a ban on the use of accommodation addresses for mail order software.

Companies often used city-centre addresses because they attracted more mail, said CTA secretary Nigel Backhurst.

He said: "But it can be difficult when people have got a problem to try and trace who and where they are."

He spoke of a problem the CTA had solved involving a

Continued on page 5

Another devastating new game from the fabulous Postern range.

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Milton Keynes now has its own specialist software shop, Soft-ly, which opened last month in the indoor shopping centre. It will be stocking software, peripherals and books, and aims to cater for both games players, programmers and owners of working micros.
Soft-ly, 5-7 Deer Walk, Specialist Arcade, Central Milton Keynes

---

New out from Wintersoft is Operation Gremlin for the 48K Oric. It's an arcade adventure, and costs £6.95.
Wintersoft, 30 Uplands Park Road, Enfield, Middlesex EN2 7PT

J. Morrison, best known for its Dragon games, is now branching out into software for the Commodore 64. First out will be the 64 version of its Dragon game Vultures, at £6.95, followed by Bonka and Space Panic.
J. Morrison, 2 Glensdale Street, Leeds LS9 9JJ

Specially for armchair sports fans, Abrasco's first two Spectrum games are simulations of golf and pool. They're priced at £6.95, and Abrasco says they're almost like the real thing.
Abrasco, The Grange Barn, Pikes End, Eastcote, Middlesex

Thorn EMI is launching five of its popular cartridge games on cassette for the Spectrum. They are River Rescue, Volcanic Planet, Gold Rush, Blockade Runner and Road Racer, and will cost around £6.95. All use both joystick and keyboard control, and all but River Rescue will run on 16K machines.
Thorn EMI, Upper Saint Martin's Lane, London WC2H 9ED

Mogul is hoping that its range of 13 arcade and adventure games, which have been storming the software charts in the USA, will have the same success over here. Machines covered include the Spectrum, Commodore 64, VIC-20, TRS-80, Oric and TI-99/4A, and there are four titles written in the UK specially for the Spectrum: Vipers, Potty Planter, Crash and Fruit Machine.
Mogul, 90 Regent Street, London W1R 5PA

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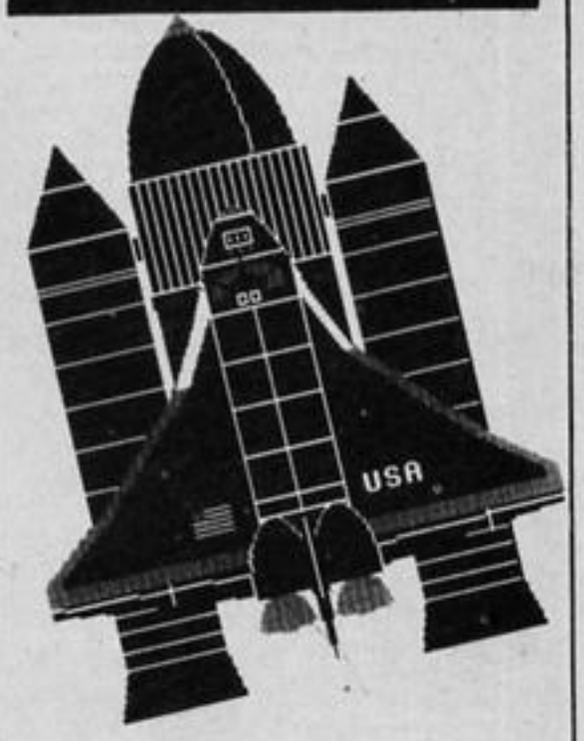

Launch your own Space Shuttle with the BBC program which starts on page 10

There's six pages of software reviews in this issue — more than any other magazine

Get into Oric machine code with the disassembler on pages 42-45

CALPAC LEARNING SERIES

Colour graphics and sound are used extensively to make learning more enjoyable.

5. MULTIPLICATION TABLES. This program with correction sequences enables you to test individual multiplication tables, or all tables up to a maximum that you choose. Carriages are added to a train as the score increases – see the train glide through the countryside when the test is finished.

6. THE ROMANS. Answer questions on the Romans to win a horse, chariot, viaduct and temple. Answer enough correctly and the horse will gallop away with its chariot.

7. SPELLING TESTER. The words in the test are initially displayed on the screen. Then short sentences are used as prompts for the words, which must by typed correctly to add stages to a space-ship.

Replace the words and sentences in the program with weekly spelling lists, save them on cassette, and you will rapidly create a whole library of programs.

8. HOMOPHONES. Sale or sail; bare or bear? Choose the correct word to complete the sentence. Extra motivation is provided by a coloured pot-plant, which grows with each correct response. The plant flowers in an unusually tuneful fashion at the end of the program.

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Published by Calpac Computer Software, 108 Hermitage Woods Crescent, St Johns, Woking, Surrey GU21 1UF

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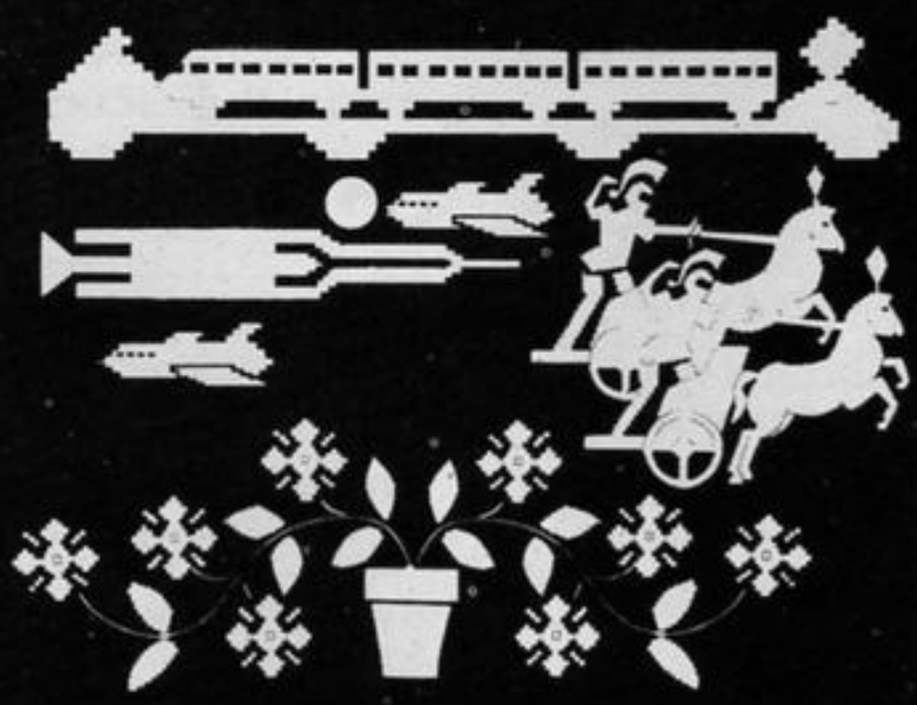
CALPAC LEARNING SERIES

ZX SPECTRUM

VOL. 2

CALPAC LEARNING SERIES

PROGRAMS 5-8



5. MULTIPLICATION TABLES
6. THE ROMANS
7. SPELLING TESTER
8. HOMOPHONES

SPECTRUM FROM 7 YEARS | 16K 48K

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Saturday / Sunday
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Alexandra Palace

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10. VERB PRACTICE. You have to complete the sentences using the correct tenses of the verbs. The program concentrates on those irregular verbs that often cause difficulty. An underwater landscape is created as questions are correctly answered.

11. THE STRUCTURE OF THE FLOWER. This program explains how the parts of the flower are involved in the formation of seeds. This is a three part program which makes full use of high resolution colour graphics.

12. LONG DIVISION. This detailed program takes the learner through long division sums in easy stages. Correction sequences are automatically provided when they are needed. Sums with remainders can be chosen if required.

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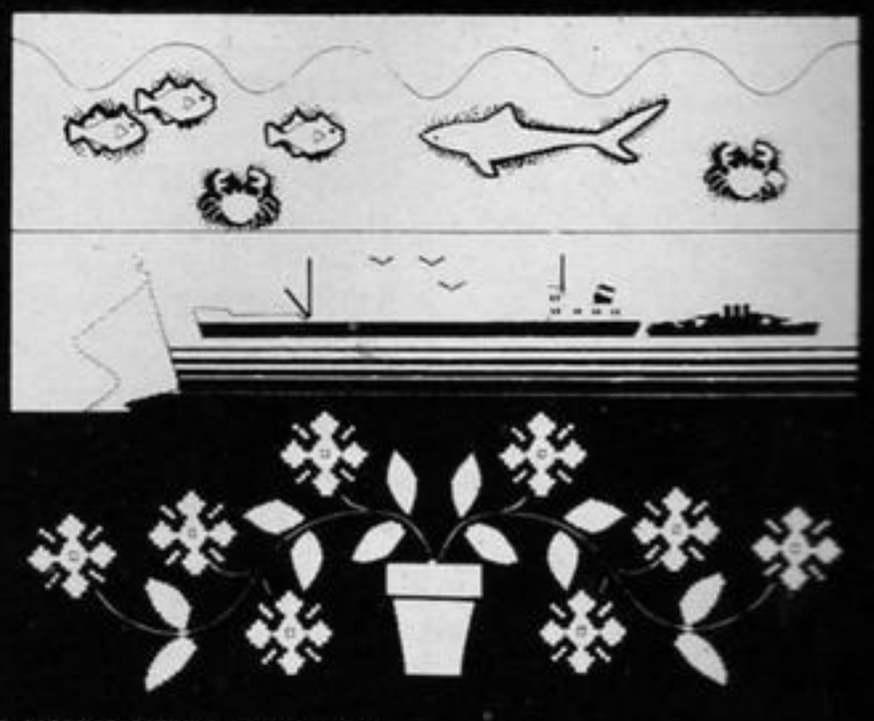
ZX SPECTRUM

VOL. 3 FROM 9 YEARS

CALPAC LEARNING SERIES

PROGRAMS 9-12



9. NOUNS, VERBS, ADJECTIVES AND ADVERBS
10. VERB PRACTICE
11. THE STRUCTURE OF THE FLOWER
12. LONG DIVISION

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Mail order

From front page

Scottish company which was advertising a London address.

He said: "There was no answer and a court order could not be served. In that case I was able to sort it out. The difficulty was that the letter arrived when the company was closed for the holidays.

"They had used an accommodation address because they got more mail than if they had used the Scottish address."

Mr Backhurst said the CTA was pressing the Government to bar the practice of using accommodation addresses in this way.

Next month the CTA is starting a new scheme in a bid to bring to an end same-name software.

Mr Backhurst said the aim was to avoid disputes between software houses over who used the name first. He pointed out that, for example, there were 29 Munchman programs — 10 of them for the Spectrum.

He said: "It can get a bit confusing."

Under the new scheme new games — even development copies — would be lodged with the CTA, sealed and numbered. The association would not even look at the product, said Mr Backhurst.

If there was a dispute, the date of origination could be proved.

● The CTA has just come through a cash problem because subscription income did not meet the bills, said Mr Backhurst. Members loaned the association £300, he said and added: "It was close, but we are now just about through it."

The main problem was that the cost of checking the credentials of applicants was nearly as much as their first subscription. So now there will be a £30 joining fee as well as the £50 annual subscription. And the monthly newsletter will now be a quarterly journal to save money. The CTA will use a trade magazine to keep members in touch monthly.

Computer Trade Association, 108 Margaret Street, Coalville, Leics LE6 2LX

DLT's micro challenge

It's surprising who you'll find in front of a computer keyboard these days. Disc jockey Dave Lee Travis has joined forces with Twig Systems to promote a range of six micro grames which, he says, "will have people beating their heads on the floor with frustration."

To score high on the games, says DLT, you'll need to use brains rather than brute force. But do well at all six, and you'll be in the running for DLT's Monster Challenge, and a prize of £10,000.

When 10 competitors have solved all the games, there'll be a televised final in London to pick the lucky — or skillful — winner.

The six games, which are available for the BBC, Dragon and Spectrum, are Air Sea Missile, Cambridge, Take the Strain, Othello, The Tower and Countdown Quiz.

They cost £9 per game or £45 for six, plus 50p postage and packing, and come with full instructions on how to take part in the Monster Challenge.

Twig Systems, 6 High Street, Wendover, Bucks

DLT throws down a Monster Challenge

Santa

From front page

Starter Packs are running low. But we should be able to meet the demand for Commodore 64s and Dragons. We've also sold quite a few of the Atari 600XL, which we've just brought in.

"Software is selling tremendously well, too, I'm embarrassed to say."

Did he think sales would plummet after Christmas? "I'd think the opposite. There's bound to be an unsatisfied demand for hardware and software, and people will be buying computers with money they were given for Christmas. It should be a tremendous opportunity."

Stewart Binnie, merchandise controller at W. H. Smith, said: "We're delighted with the performance of our new computer shops-within-shops, and we anticipate that sales will continue to be very strong for the next two months at least.

"In particular, we've seen the Spectrum going from strength to strength. The Commodore 64 is going well, but sales have been hit by a shortage of Commodore's cassette recorders."

Smiths has had a huge demand for the Electron — one branch had 15,000 telephone enquiries about it, and another sold out of a batch of 30 in an hour and a half. But Stewart Binnie commented, "though demand for the Electron is currently far exceeding supply, we hope that the situation will improve prior to Christmas."

And Phillip Halton, microcomputer buyer at Laskys, said: "Our general home computer trading pattern is building up very nicely — the Oric is doing extremely well, and the new Atari computers are too. In terms of units, we've probably sold more Ataris than anything else.

"By late December, demand may start to outstrip supply — we have already had supply problems with the Spectrum and with the Commodore cassette unit. But we'll get round them somehow.

"Our staff are obviously pushed, but I think they'll cope. We probably employ more staff and train them a bit better than anybody else in the High Street.

"I see the present interest in home computers continuing well into the first half of next year."

You could be on our pages

We welcome programs articles and tips from our readers.

PROGRAMS should, if possible, be computer printed to a width of 48 characters (use a new ribbon) and/or sent on cassette. Check carefully that they are bug-free. Include details of what your program does, how it works, variables you have used and hints on conversion.

ARTICLES on using home computers should be no longer than 2,000 words. Don't worry about your writing ability — just try to keep to the style in HCW. Articles most likely to be published will help our readers make better use of their micros by giving useful ideas, possibly with programming examples. We will convert any sketched illustrations into finished artwork.

TIPS are short articles, and brief programming routines which we can put together with others. Your hints can aid other computer users.

Competitive rates are paid.

Keep a copy of your submissions and include an SAE if you want them returned. Label everything clearly and give a daytime and home phone number if you can.

Paul Liptrot, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE

Turn your CBM64 into a sophisticated synthesiser, a piano, violin, organ, guitar or harpsichord. Woodwind, drums or cymbals and play along with your own or any of the preset rhythms.

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SPECTRUM GOLF available from WHSMITH

Two say: We're No.1

In the run-up to the peak sales season, both of the big two home computer makers say they are No. 1 in the UK.

First Commodore's UK marketing manager, John Baxter said: "We know we are way ahead of Sinclair, as we predicted."

In October, Commodore had shipped 20,000 Commodore 64s and 60,000 VIC-20s making a total of 130,000 with other computers.

And in the July-December period the company would exceed its forecast sales of 425,000 VICs and 64s.

However, Bill Nichols, for Sinclair Research, said its UK sales for September for the Spectrum and ZX81 were 150,000 and equal that for October.

And for July-December Sinclair would sell more than half a million.

Mr Nichols said: "We would certainly agree that Sinclair and Commodore are a long way ahead of the rest of the field and are the big two in the UK.

"While we have no wish to be drawn into the numbers game, we are very confident we remain No. 1."

Commodore Business Machines, 675 Ajax Avenue, Slough, Berks SL1 4BG
Sinclair Research, Stanhope Road, Camberley, Surrey GU15 3PS

Little Brother

Measuring the size of this page, the new Brother EP-22 is a travelling typewriter and a computer printer.

Powered by four 1.5 volt batteries, it works almost silently, using thermal printing with a dot matrix font.

The so-called Baby Brother has a built-in RS-232 interface and costs £169.95.

Jones & Brother, Shepley Street, Audenshaw, Manchester M34 5JD

The Baby Brother — small and quiet

Briefly

Budget-priced games for the Atari — some at less than half price — are out from Allrian Data Services. The first five tapes, all at £7.50 by Artworx, of New York State, are Intruder Alert, Rings of the Empire, Space Trap, Giant Slalom and Crazitack. Some cost £17 when first on sale several months ago. Allrian says Atari software had been expensive because it was imported in small quantities from America. The company would continue with its full-priced games.

Allrian, 1000A Uxbridge Road, Hayes, Middlesex UB4 0RL

An acrylic stand to hold three data cards for the 48K Lynx keyboard is now out from Peripheral Products. The stand, at £14.95 with the cards, can also support magazines while you are typing in a program.

Peripheral Products, 209 Kenton Lane, Kenton, Middlesex

Newly-launched Intrigue Software has a seasonal release — Santa and the Goblins, a £5.95 adventure for the standard TI-99/4A. You play Santa trying to deliver gifts in a large stately home, but greedy goblins are trying to make off with the presents. Proprietor Dennis Webb says the characters "talk" in Hobbit style.

Intrigue Software, Cranbrook Road, Tenterden, Kent TN30 6UJ

Build your own plastic palace

Have you always wanted to live in an electronically-controlled house but couldn't figure out how to do it? Well, the answer is now available in book form.

Roy Mason is an architect who has worked on many visionary projects. Recently he completed the design of a modernistic home near Disney World in Orlando, Florida.

The home is called Xanadu, is made from polyurethane, and is completely computer controlled.

Mason has coined a term called archetronics to designate the interface between architecture and electronics.

The house, although it could be lived in, is used solely as a demonstration unit. The electronic and computer controls are completely off the shelf applications of existing products; nothing was customised.

Some of the special features in the house include: a kitchen that keeps track of what food is in stock, selects menus, generates shopping lists, and files recipes; a "Sensorium" using biofeedback to monitor your mood, pulse rate, and play appropriate music; computer terminals in every room and a 60-channel satellite TV.

Lights, draperies, heating and cooling systems are all automatically controlled; there is a complete art library on videodisc. All controls use existing house wiring; no special wiring was required.

The best point of all is that Mason has written and published a book that describes a "typical" day in the life of a Xanadu resident, but better still, tells how to install computer controls in existing houses and includes a list of distributors and manufacturers who make these devices.

The book is available from Acropolis Books, of Washington DC, and costs $18.95.

Well worth reading, as many ideas can be adapted by those of us who have the inclination if not the cash to build our own electronically controlled plastic palace. Happy reading!

★ ★ ★ ★

Perhaps not willing to be completely outdone by our British cousins, the United States' Public Television Network has begun a series on, as they put it, demystifying high technology.

The show will air weekly, and started late last month. Its official name is The New Tech Times and will explore home computers, home robots, satellite TV and videotext, computer games, and other aspects of new technology that has application in the average home.

Different shows will focus on various special applications, such as electronic mail, computer bulletin board systems, computer art, and computer control of various aspects of the home environment.

The show is mainly designed for those who still fear the computer and/or think it will blow up if the wrong button is pressed. Thirteen segments are being taped, with a second season of 13 more shows in the planning stage.

★ ★ ★ ★

If you have an Epson printer, you might be interested in this product. It is called Finger Print, an add-in plug-in module which gives you access to such printer functions as compressed, italic and emphasized print.

You can also perform operations such as double-strike, perforation skipover, left margin indent, fine print, and clear buffer.

These various functions can be combined and become available from the printer control panel.

The device lists for a mere $59.95 and is available from Dresselhaus Computer Products, 837 East Alosta Avenue, Glendora CA 91740, (213) 914-5831. Seems like good value for money.

Out of room again. See you next week.

Bud Izen
Fairfield, California

HAVE YOU BEEN INVOLVED IN A MYSTERIOUS ADVENTURE RECENTLY?

If so, it is quite probable that you are presently suffering from TIS, more commonly known as Total Involvement Syndrome.

TIS manifests itself in a number of ways, one of the most dramatic symptoms being a victim's complete inability to feel at ease in the world of reality. Other symptoms include insomnia, a desparate need to play a Mysterious Adventure, and an overwhelming sense of acute enjoyment.

Experts believe that TIS is usually contracted as a result of prolonged exposure to Mysterious Adventures, this is commonly caused by owning any of the following Home Computers:–

48K SPECTRUM, BBC MODEL A OR B, TRS80, COLOUR GENIE, ATARI 400/800, COMMODORE 64, DRAGON 32, 16K ZX81, LYNX etc.

When questioned about this epidemic, a representative of DIGITAL FANTASIA, a company who are actively involved in research and development work on Mysterious Adventures said, "There is probably no cure for TIS other than mains failure, faulty RAM chips etc. which can be at best only a Temporary solution". "In the absence of a more permanent cure, I would advise TIS sufferers to submit to the Syndrome and obtain Mysterious Adventures from any sources available to them". "TIS is highly contagious and in view of the current Worldwide Epidemic, I would say enjoy it while you can, resistance is futile".

If you have a BBC Computer, Commodore 64, 48K Spectrum, Atari 400/800, or Dragon 32 you can obtain Mysterious Adventures in any of the following dosages:–

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4) ARROW OF DEATH (PART 2)
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6) CIRCUS
7) FEASIBILITY EXPERIMENT
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10) TEN LITTLE INDIANS

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BARCLAYCARD VISA

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CHANNEL 8 SOFTWARE

51 FISHERGATE, PRESTON. LANCASHIRE, ENGLAND. TEL. (0772) 53057

Mysterious Adventures

WHAT ARE MYSTERIOUS ADVENTURES?

MYSTERIOUS: (Adjective):– "Baffling, full of mystery, strange or unaccountable".

ADVENTURE: (Noun):– "An enterprise full of risk or danger, an experience of unforeseen events endangering the participants life, a gamble on failure or success".

To start play on a MYSTERIOUS ADVENTURE is to take a step out of the world of reality and into the world of dreams. Your computer is your guide on these fantastic journeys in time and space where danger is ever present and solutions to problems seldom come easy.

By typing in simple commands in plain English you can "talk" to your computerised guide and tell it what your next actions are to be.

MYSTERIOUS ADVENTURES bring a frightening reality to the surreal situations in which you will find yourself. You will become involved in these strange worlds of the imagination, you will feel anger when things seem to be moving against you, you will feel elated when you overcome obstacles that are set in your way. Eventually you will feel overjoyed as you reach the climax of your mission and success is yours.

Any MYSTERIOUS ADVENTURE is not a mission to be taken lightly, success will never be instant – just as Rome was not built in a day, so each Adventure can rarely be completed in one session. To this end a "SAVE GAME" feature has been incorporated in each of the Adventures. This means that at any given time during play of an Adventure, you can store on tape your precise whereabouts, your equipment carried, and any other pertinent details about your present status.

NEW DEVELOPMENTS ON MYSTERIOUS ADVENTURES

Over the past few years, Adventure programs on Computers have almost always been presented in the classic "Text only" mode. For most Adventure players this has indeed been the way they prefer to play Adventures. The mental imagery generated by such an approach is limited only by the player's own imagination. One of the main reasons for the "Text only" approach has been the lack of hardware capabilities with regard to Graphics resolution – Pictorial Adventures could at best be only very limited in scope.

This situation is changing now however, and Brian Howarth, author of the MYSTERIOUS ADVENTURES series, has spent many hours incorporating Graphics into the Adventures. By working in close conjunction with Jon Blacow, a professional Artist, Brian has produced a series of extremely vivid and imaginative Adventures. Each MYSTERIOUS ADVENTURE now features, in addition to the Text description, pictorial "views" of your current location and surroundings. As you enter each new location, a high resolution, colour picture is rapidly drawn. The effect of this is to bring much more reality to the Scenario, you can actually see the situation you are faced with and act accordingly. It must be stressed that each picture has been designed so that it will enhance, rather than conflict with your mental imagery. At the single stroke of a key, you can erase the picture and carry on with your Adventure in text only if this is your preference. We are confident that no other Adventure programs can boast such breathtaking realism and imagination combined with the flexibility and ease of play that have made MYSTERIOUS ADVENTURES such a phenomenal worldwide success.

In addition, the Adventures now features full sentence decoding as standard. These mean that you are no longer restricted to inputting single or two-word commands. You can now type in whole sentences in more or less plain English. Your computer will quickly analyse the sentence and perform a whole string of your commands. Just another feature designed to maximise your enjoyment of these world beating games!

The "New style" MYSTERIOUS ADVENTURES are currently available for the 48K SPECTRUM, COMMODORE 64. More releases are planned this year which will include DRAGON 32, ORIC-1, APPLE II & IIe, ATARI, LYNX, MATTEL AQUARIUS, IBM PC etc. Please write or phone for availability.

Be there as the Space Shuttle launches and lands

Why wait for TV pictures of the next Space Shuttle mission? Kevin Boyd's program for the BBC model B micro simulates it so realistically that you'll think it's the real thing

Sit back and watch as the U.S. Space Shuttle takes off in a cloud of smoke and launches a satellite into orbit.

Then you have a pilot's eye view of the spacecraft coming in to land on a runway etched into salt flats.

My simulation uses 6.5K and runs in MODE 1 on the BBC model B computer for 117 seconds.

The drawings of the shuttle and booster rockets are as accurate as I could make them. Certain things were deliberately left out for the sake of clarity.

Once you have typed in the program it would be a good idea to carefully check all the co-ordinates in the PROCedures before RUNning.

The program is split into five sections and each uses three main graphics routines which draw triangles (PROC_TRI 1090-1130), rectangles (PROC_RECT 1140-1190) and circles (PROC_CIRCLE 1200-1280).

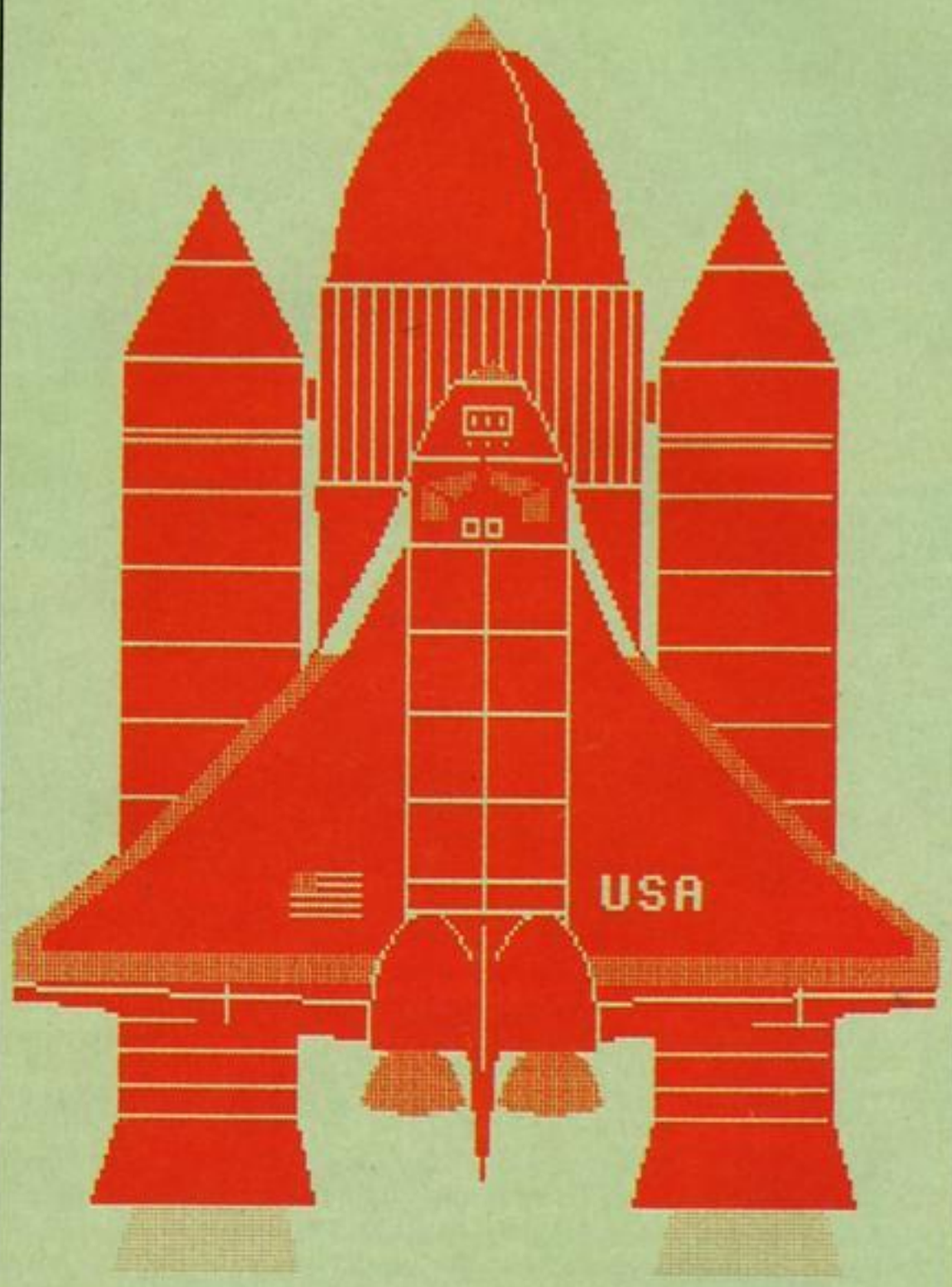
These routines are used a lot, so here is a description of each of them:

PROC_TRI has seven parameters. The first six are three sets of two co-ordinates to define the three points of the triangle and the seventh parameter is a flag. If set to 1 the triangle is filled in, if zero it is not.

PROC_RECT works in the same way to draw a rectangle, starting bottom left.

PROC_CIRCLE begins with two parameters for the centre of the circle. The next two are the radius and a flag, used as above. The routine uses two arrays, set up in lines 130-140. They hold the SIN and COS values to calculate the circle — much faster than calculating the values each time you call the routine.

Screen dump of the Space Shuttle, mounted on the giant booster rockets, before launch



How it works

110-140 produce title page while circle arrays are calculated
150 set graphics mode (resolution is 320 by 256 in hi-res with four colours, 40 by 32 text)
160-170 set up sound envelopes
180 change colour 2 (yellow) to colour 6 (cyan)
190 cursor off
200-240 call PROCedures
270-600 draw fuel tank, booster rockets
610-1080 draw shuttle
1090-1130 triangle
1140-1190 rectangle
1200-1280 circle
1290-1340 initial blast of smoke
1350-1430 ever-widening tower of smoke, move shuttle
1770-1730 open payload doors
1740-1820 draw satellite inside payload area, define text window from shuttle to top of screen then scroll satellite to top
1830-1970 launch satellite out of sight of shuttle, then out of your view
1990 invert: black to white, white to black
2000-2050 view of shuttle approaching runway
2060-2140 shuttle touches down

```
  110 MODE7
  120 CLS:PRINTTAB(5,10);CHR$141;"SPACE SHUTTLE SI
MULATION":PRINTTAB(5);CHR$141;"SPACE SHUTTLE SIMUL
ATION"
  130 DIMS(90),C(90)
  140 A%=-1:R%=400:FORA=0TORAD360 STEPRAD4:A%=A%+1
:S(A%)=SIN(A):C(A%)=COS(A):NEXT
  150 MODE1
  160 ENVELOPE1,1,15,-2,20,8,40,5,10,-1,-1,-1,126,
100
  170 ENVELOPE2,7,113,0,0,3,1,1,30,-40,-1,-5,126,1
26
  180 VDU19,2,6,0,0,0
  190 VDU23;8202;0;0;0;
  200 PROCGR_SHUTTLE
  210 PROCCount_Down
  220 PROCLAUNCH
  230 PROCSP_SHUTTLE
  240 PROCLAND_SHUTTLE
  250 END
```

Hints on conversion

You will have a hard task converting this program to another micro because it uses the BBC's graphics capabilities to the full.

Your computer should have a graphics resolution of 320 by 256 pixels, the ability to individually colour each and have up to four colours available (white, black, red and cyan).

I have made a lot of use of text windows in the satellite launch routine. This allows you to define a window anywhere on the 40 by 32 text screen and then scroll anything inside that window without affecting the rest of the screen.

The command which does this is VDU28, followed by four parameters (left X, bottom Y, right X and top Y).

Other VDU commands used in the program are:

VDU19 followed by five numbers. The first is the colour which is to be changed and the second is the colour into which it is to be changed. The last three digits are zeros
VDU5 enables you to print a character anywhere on the graphics screen. Note that the MOVE command must be used (see 930)
VDU26 restores any text window to normal screen size
VDU11 moves the cursor up one line
VDU30 homes text cursor to top left
VDU30 followed by VDU11 scrolls the screen down
VDU4 disables the effect of VDU5

Colour numbers used in GCOL commands are: **zero** black, **1** red, **2** yellow (changed to cyan at 180) and **3** white.

BBC PROGRAM

```
  260 DEFPROCGR_SHUTTLE
  270 REM*******: FUEL TANK :*************
  280 PROC_CIRCLE(640,700,140,300,1)
  290 GCOL0,0:PROC_CIRCLE(600,830,100,200,0)
  300 GCOL0,3:PROC_RECT(505,250,275,550,1)
  310 GCOL0,0
  320 MOVE500,806:DRAW800,806:MOVE500,650:DRAW800,
650
  330 FORL=500TO780STEP16:MOVEL,806:DRAWL,650:NEXT
  340 GCOL0,2
  350 PROC_TRI(610,995,660,995,638,1020,1)
  360 REM****** LEFT ROCKET BOOSTER ******
  370 GCOL0,1
  380 PROC_TRI(330,30,490,30,425,300,1)
  390 GCOL0,3
  400 PROC_TRI(310,80,502,80,425,400,1)
  410 PROC_RECT(335,120,150,620,1)
  420 GCOL0,1
  430 FORL=640TO300STEP-60:MOVE335,L:DRAW485,L:NEX
T
  440 FORL=300TO150STEP-25:MOVE335,L:DRAW485,L:NEX
T
  450 MOVE335,680:DRAW485,680:MOVE335,688:DRAW485,
688
  460 GCOL0,3
  470 PROC_TRI(335,750,485,750,410,880,1)
  480 GCOL0,0
  490 MOVE335,820:DRAW485,820
  500 GCOL0,3:PROC_RECT(492,700,6,30,1)
  510 REM****** RIGHT ROCKET BOOSTER ******
  520 GCOL0,1:PROC_TRI(800,30,960,30,880,300,1)
  530 GCOL0,3:PROC_TRI(780,80,972,80,876,400,1)
  540 PROC_RECT(800,100,155,640,1)
  550 GCOL0,1
  560 FORL=640TO300STEP-60:MOVE800,L:DRAW950,L:NEX
T
  570 FORL=300TO150STEP-25:MOVE800,L:DRAW950,L:NEX
T
  580 MOVE800,680:DRAW950,680:MOVE800,688:DRAW950,
688
  590 GCOL0,3:PROC_TRI(800,750,950,750,875,880,1):
GCOL0,0:MOVE800,820:DRAW950,820
  600 GCOL0,3:PROC_RECT(788,700,6,30,1)
  610 REM********* SPACE SHUTTLE **********
  620 GCOL0,3:PROC_CIRCLE(650,520,90,220,1):GCOL0,
0:PROC_CIRCLE(650,520,90,220,0)
  630 REM******** WINGS ************
  640 GCOL0,3:PROC_TRI(430,420,860,420,640,700,1)
  650 PROC_TRI(240,290,640,590,640,240,1):GCOL0,0:
FORL=506TO526STEP4:MOVEL,518:DRAWL+56,610:NEXT:GCO
L0,3
  660 PROC_TRI(240,290,240,240,640,240,1)
  670 PROC_TRI(240,240,640,240,640,200,1)
  680 PROC_TRI(1040,290,640,590,640,240,1):GCOL0,0
:FORL=732TO718STEP-4:MOVEL,610:DRAWL+48,516:NEXT:G
COL0,3
  690 PROC_TRI(1040,290,1040,240,640,240,1)
  700 PROC_TRI(1040,240,640,240,640,200,1)
  710 GCOL0,0:MOVE580,650:DRAW580,300:MOVE720,650:
DRAW720,300
  720 FORL=600TO330STEP-66:MOVE580,L:DRAW720,L:NEX
T:MOVE580,315:DRAW720,315:MOVE650,600:DRAW650,300
  730 MOVE580,670:DRAW710,670
  740 GCOL0,2:PROC_TRI(634,735,670,735,652,745,1):
GCOL0,0:MOVE630,730:DRAW680,730
  750 PROC_RECT(630,690,40,20,0):PLOT69,639,700:PL
OT69,639,696
  760 PLOT69,650,700:PLOT69,650,696:PLOT69,662,700
:PLOT69,662,696
  770 PLOT69,635,680:PLOT69,650,680:PLOT69,665,680
  780 GCOL0,2:PROC_RECT(595,620,20,30,1):PROC_TRI(
595,650,700,650,650,660,1):PROC_RECT(680,620,20,30
,1)
  790 PROC_TRI(615,635,615,650,640,650,1):PROC_TRI
(680,635,680,650,655,650,1)
  800 GCOL0,3:PROC_TRI(635,630,655,630,645,670,1)
  810 MOVE630,630:DRAW590,650:MOVE670,635:DRAW720,
660
  820 GCOL0,0:PROC_RECT(630,610,10,10,0):PROC_RECT
(650,610,10,10,0)
  830 GCOL0,0:PROC_TRI(562,612,580,612,580,640,1)
  840 PROC_TRI(720,612,732,612,725,640,1)
  850 GCOL0,2
  860 FORL=500TO520STEP4:MOVEL,512:DRAWL-158,360:N
EXT
  870 FORL=770TO790STEP4:MOVEL,512:DRAWL+158,360:N
EXT
  880 FORL=358TO338STEP-4:MOVEL,358:DRAWL-94,292:N
EXT
```

```
  890 FORL=932TO952STEP4:MOVEL,358:DRAWL+94,292:NE
XT
  900 FORL=242TO262STEP4:MOVEL,288:DRAWL,256:NEXT
  910 FORL=1026TO1046STEP4:MOVEL,288:DRAWL,256:NEX
T
  920 PROC_RECT(262,256,780,22,1)
  930 GCOL0,0:MOVE426,252:DRAW426,225:MOVE926,252:
DRAW926,225
  940 MOVE200,255:DRAW550,240:MOVE1124,255:DRAW710
,240
  950 VDU5:MOVE750,340:PRINT"USA":VDU4
  960 GCOL0,1:PROC_RECT(480,310,60,30,1)
  970 GCOL0,3:FORI=314TO340STEP8:MOVE480,I:DRAW540
,I:NEXT
```

```
  980 GCOL0,2:PROC_RECT(480,330,20,10,1)
  990 REM********* SHUTTLE ENGINES ******
 1000 GCOL0,3:PROC_CIRCLE(600,213,50,100,1):GCOL0,
0:PROC_CIRCLE(600,213,50,100,0)
 1010 GCOL0,3:PROC_CIRCLE(700,213,50,100,1):GCOL0,
0:PROC_CIRCLE(700,213,50,100,0)
 1020 PROC_RECT(540,100,210,100,1)
 1030 GCOL0,2:Y=50:FORC=164TO194STEP10:Y=Y-5:PROC_
CIRCLE(590,C,Y,10,1):NEXT
 1040 Y=50:FORC=164TO194STEP10:Y=Y-5:PROC_CIRCLE(7
10,C,Y,10,1):NEXT
 1050 REM************ TAIL FIN ************
 1060 GCOL0,3:PROC_TRI(650,100,635,250,665,250,1):
PROC_TRI(635,250,665,250,650,310,1)
 1070 GCOL0,0:MOVE650,190:DRAW650,300
 1080 ENDPROC
 1090 DEFPROC_TRI(X1,Y1,X2,Y2,X3,Y3,F)
 1100 MOVEX1,Y1
 1110 IFF=0 DRAWX2,Y2 ELSE MOVEX2,Y2
 1120 IFF=0 DRAWX3,Y3:DRAWX1,Y1 ELSE PLOT85,X3,Y3:
MOVEX1,Y1
 1130 ENDPROC
 1140 DEFPROC_RECT(X,Y,L,W,F)
 1150 MOVEX,Y:DRAWX+L,Y
 1160 IFF=0 DRAWX+L,Y+W ELSEPLOT85,X,Y+W
 1170 IFF=0 DRAWX,Y+W ELSEPLOT85,X+L,Y+W
 1180 MOVEX,Y+W:IFF=0 DRAWX,Y ELSE MOVEX,Y
 1190 ENDPROC
 1200 DEFPROC_CIRCLE(X,Y,R1,R2,F)
 1210 LOCALZ,X%,Y%
 1220 MOVEX+R1,Y:MOVEX+R1,Y
 1230 A%=0:FORZ=0TO6STEP.2
 1240   X%=X+R1*C(A%):Y%=R2*S(A%):A%=A%+3
 1250   IFF<>1 DRAWX%,Y+Y%ELSEPLOT85,X%,Y+Y%:PLOT8
5,X%,Y-Y%
 1260   IFF=1 AND Z>3.2 Z=6
 1270   NEXT
 1280 ENDPROC
 1290 DEFPROCLAUNCH
 1300 GCOL0,3
 1310 SOUND0,-15,4,200
 1320 PRINTTAB(0,31):PROC_RECT(330,5,155,53,1)
 1330 PROC_RECT(800,5,160,53,1)
 1340 PROC_TRI(550,190,630,190,590,100,1):PROC_TRI
(750,190,670,190,710,100,1)
 1350 W=310:E=500
 1360 FORS=0TO45:PRINTTAB(0,31)
 1370   W=W-20:E=E+20
 1380   FORD=1TOW:NEXTD
 1390   PROC_TRI(W,5,E,5,400,80,1)
 1400   PROC_TRI(W+470,5,E+480,5,870,80,1)
 1410   NEXT
 1420 CLS
 1430 ENDPROC
 1440 DEFPROCCount_Down
 1450 FORC=10TO0STEP-1
 1460   SOUND1,1,C*10,20
 1470   FORM=28TO4STEP-1:PRINTTAB(2,M);C;" ":PRINT
TAB(2,M+1);"  ":NEXT
 1480   FORD=1TO1000:NEXTD
 1490   PRINTTAB(2,3);"  "
 1500   NEXT
 1510 ENDPROC
 1520 DEFPROCSP_SHUTTLE
 1530 FORI=1TO3:VDU19,I,0,0,0,0:NEXT
 1540 GCOL0,3
 1550 PROC_CIRCLE(200,0,250,100,1)
```

BBC PROGRAM

```
 1560 PROC_CIRCLE(300,60,200,80,1)
 1570 PROC_RECT(300,0,800,140,1)
 1580 GCOL0,2
 1590 PROC_RECT(170,110,40,10,1)
 1600 GCOL0,0
 1610 MOVE300,70:DRAW990,70
 1620 FORI=300TO990STEP172:MOVEI,70:DRAWI,140:NEXT
 1630 GCOL0,3:PROC_TRI(1000,140,1100,140,1190,350,
1):PROC_TRI(1140,140,1190,350,1250,350,1)
 1640 PROC_TRI(1100,140,1150,140,1180,330,1)
 1650 PROC_CIRCLE(1150,100,150,50,1):GCOL0,0:PROC_
CIRCLE(1150,100,150,50,0)
 1660 PROC_RECT(1110,50,200,100,1)
 1670 VDU19,1,1,0,0,0:VDU19,2,6,0,0,0:VDU19,3,7,0,
0,0
 1680 GCOL0,2:Y=50:FORC=100TO103:Y=Y-10:PROC_CIRCL
E(1140+Y,C,10,Y,1):NEXT
 1690 GCOL0,3:PROC_RECT(1110,80,50,60,1):GCOL0,0:P
ROC_RECT(1110,80,50,60,0)
 1700 GCOL0,2:Y=50:FORC=20TO23:Y=Y-10:PROC_CIRCLE(
1115+Y,C,20,Y,1):NEXT
 1710 GCOL0,3:PROC_TRI(1100,5,1100,50,1120,20,1)
 1720 GCOL0,0
 1730 FORI=170TO68STEP-1:MOVE300,I:DRAW990,I:NEXT
 1740 REM******** SATELITE ****************
 1750 VDU28,10,28,28,1
 1760 GCOL0,1:PROC_CIRCLE(550,250,100,20,1):PROC_C
IRCLE(550,120,100,20,1)
 1770 GCOL0,3
 1780 PROC_RECT(440,125,220,118,1)
 1790 GCOL0,1:PROC_RECT(460,190,60,30,1)
 1800 GCOL0,3:FORI=194TO220STEP8:MOVE460,I:DRAW520
,I:NEXT
 1810 GCOL0,2:PROC_RECT(460,210,20,10,1)
 1820 GCOL0,0:PROC_RECT(450,130,200,30,0)
 1830 REM*** LAUNCH SATELITES ***********
 1840 SOUND0,-8,4,40
 1850 FORI=0TO48:PRINT
 1860    IFI>25THENFORD=1TO80:NEXTD
 1870    NEXTI
 1880 GCOL0,1:PROC_RECT(75,850,360,60,1):PROC_RECT
(670,850,360,60,1)
 1890 GCOL0,3:FORI=80TO440STEP10:MOVEI,850:DRAWI,9
10:MOVEI+595,850:DRAWI+595,910:NEXT
 1900 SOUND1,2,100,100:SOUND1,2,110,100:SOUND1,2,1
00,100
 1910 VDU28,0,31,39,20
 1920 VDU30:FORI=1TO12:VDU11
 1930    FORD=1TO1000:NEXTD
 1940    NEXTI
 1950 VDU26:FORI=0TO10:PRINTTAB(0,31);" "
 1960    FORD=1TO1000:NEXTD,I
 1970    ENDPROC
 1980    DEFPROCLAND_SHUTTLE
 1990    VDU19,0,7,0,0,0,19,3,0,0,0,0
 2000    GCOL0,3
 2010    MOVE600,600:DRAW640,600
 2020    FORI=0TO340STEP10
 2030       MOVE340-I,580-I:DRAW600,600:MOVE640,600:
DRAW940+I,580-I:DRAW340-I,580-I
 2040       FORD=1TO200:NEXTD:GCOL0,0:MOVE340-I,580-
I:DRAW600,600:MOVE640,600:DRAW940+I,580-I:DRAW340-
I,580-I:GCOL0,3
 2050       NEXT
 2060    CLS
 2070    A=I
 2080    FORI=0TO150STEP5:MOVE0,A:DRAW600-I,640-I:M
OVE1279,A:DRAW640+I,640-I:DRAW600-I,640-I
 2090       FORD=1TO100:NEXT
 2100       GCOL0,0:MOVE0,A:DRAW600-I,640-I:MOVE1279
,A:DRAW640+I,640-I:DRAW600-I,640-I:GCOL0,3
 2110       NEXT
 2120    MOVE0,A:DRAW600-I,640-I:MOVE1279,A:DRAW640
+I,640-I:DRAW600-I,640-I
 2130    PRINTTAB(10,5)"SHUTTLE LANDED SAFELY"
 2140    ENDPROC
```


Home Computing WEEKLY

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SOFTWARE FOR SPECTRUM AND ZX81

OUR POLICY

We aim to create programs which you will keep on using until your computer wears out. You won't find our programs in the top ten and you will look in vain for colour adverts and fancy packaging. Nevertheless we have built up a solid following of discerning users in all parts of the world. Read the reviews of our programs if you can find them. We have been consistently praised for quality, originality and value for money.

WHAT DO YOU GET?

The bulk of our cassettes are now made by the factory which produced the Horizons tape. Programs are recorded twice and carry on the reverse side an audio narrative to supplement the operating instructions. Where appropriate, cassettes are accompanied by a comprehensive and clearly written instruction manual.

48K SPECTRUM

"Day of the Match" £5.00

Fascinating and realistic simulation of an entire football season. Name your own teams if you wish (English league provided on cassette). Rate each team from one to nine in various success categories such as attack, defence, manager, etc. Watch the season unfold. Includes knock-out cup option.

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Simulates a test match series or one day international series. Set up your own teams and pool of players (England v Australia provided). Rate each player's capabilities as batsman and bowler on a one to nine scale for qualities such as talent, effort, etc. Pick your teams and play the match. Electronic scoreboard shows progress of a match. Full supporting score card and series averages.

"Superplan Generator" £12.00

Spreadsheet type program with variable column width and variable number of columns. Lets you sacrifice columns you don't need to get more lines.

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Ready made applications programs for sales day book, purchase day book, cash book and petty cash book.

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Ready made applications programs for home budgeting, nutrition tables, car running costs and bank statements.

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Simple but effective information display. Up to 42 pages of text and low-res graphics. Access pages on demand or run in perpetual 'slide-show' mode. Full facilities to create your own pages and build up an information library on cassette.

16K SPECTRUM

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Create full colour high-res pictures and store them on cassette for use as titles or background screens in other programs. Or just have fun doodling and build up a cassette library of your creations. Slide show option allows you to review pictures stored on cassette.

16K ZX81

Here is a selection of titles still available for ZX81. Send sae for illustrated catalogue. These are the ZX81 equivalents of the Spectrum programs described above. Although similar in concept the specifications fall short of the descriptions given for the Spectrum.

"FOOTBALL-LEAGUE"	Forerunner of "Day of the Match"	£4.00
"TEST-MATCH"	Forerunner of "Ball by Ball"	£4.00
"VIDEO-PLAN"	Forerunner of "Superplan"	£7.00
"VIDEO-AD"	Forerunner of "Superview"	£7.00
"VIDEO-SKETCH"	Forerunner of "Superdraw"	£7.00

Many independent computer shops now stock our products but we continue to supply by mail order on an off-the-shelf, immediate delivery basis. Prices include VAT, post and packing in UK. Add a bit for postage if you live in Outer Mongolia. (Note: "Day of the Match" not available until late October 1983.)

Video Software Ltd, Stone Lane
Kinver, Stourbridge, West Midlands
Telephone: 0384 872462

ISL 48K SPECTRUM ISL

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There's 40 chances to win big-name games from leading software house Quicksilva in this fun spot the difference competition. And even if you're not lucky enough this time, you can enrol in the Game Lords Club free of charge

EVERYONE stands to gain in this week's free competition.

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The How to Enter section tells you how to get your free membership.

The competition prizes will be in the form of 40 vouchers worth £25 each for software ordered by post from Quicksilva.

You will receive a complete list of all the company's top-selling titles from which to make your choice.

The winners will be the senders of the first 40 correct entries we open at noon on Friday December 16, regardless of computer, provided the instructions below are followed.

How to enter

Study the two cartoons and circle in ballpoint pen all the differences you find.

Complete the coupon fully, including a tick in the box if you would like free membership of the Game Lords Club.

Then cut around the broken lines, seal the drawing with coupon attached in an envelope — and write clearly on the back the number of differences you found. Add the letter G to the back of the envelope for free membership of the Game Lords Club.

Post your entry to Quicksilva Competition, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE.

Entries close at first post on Friday December 16.

Copies of the coupon will not be accepted. The solution and the names of the winners will be published in the news columns of Home Computing Weekly.

The £25 vouchers and membership particulars will arrive from Quicksilva within 28 days of the publication date of that issue.

The rules

The first 40 correct entries drawn at noon on Friday December 16, 1983, will win the prizes. Coupons which are not fully completed and envelopes without the number of differences found on the back will not be considered.

Entries will not be accepted from employees of Argus Specialist Publications, Quicksilva and Alabaster Passmore & Sons. This restriction also applies to employees' families and agents of the companies.

The winners' names and the solution will appear in Home Computing Weekly. The editor's decision is final and no correspondence will be entered into.

Quicksilva Competition

Entry Coupon

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_____ **post code** _____

Computer _____

Number of differences found _____

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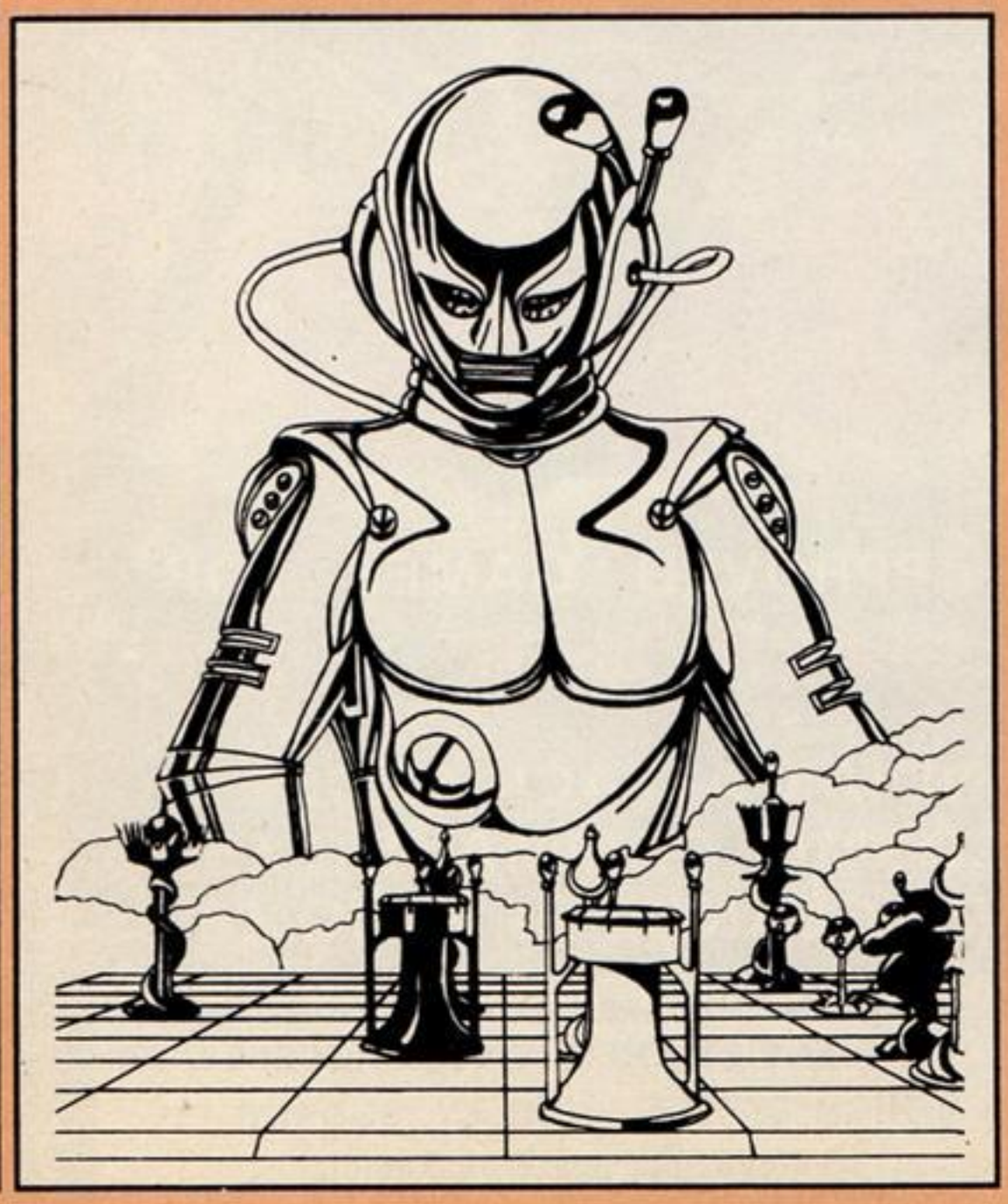

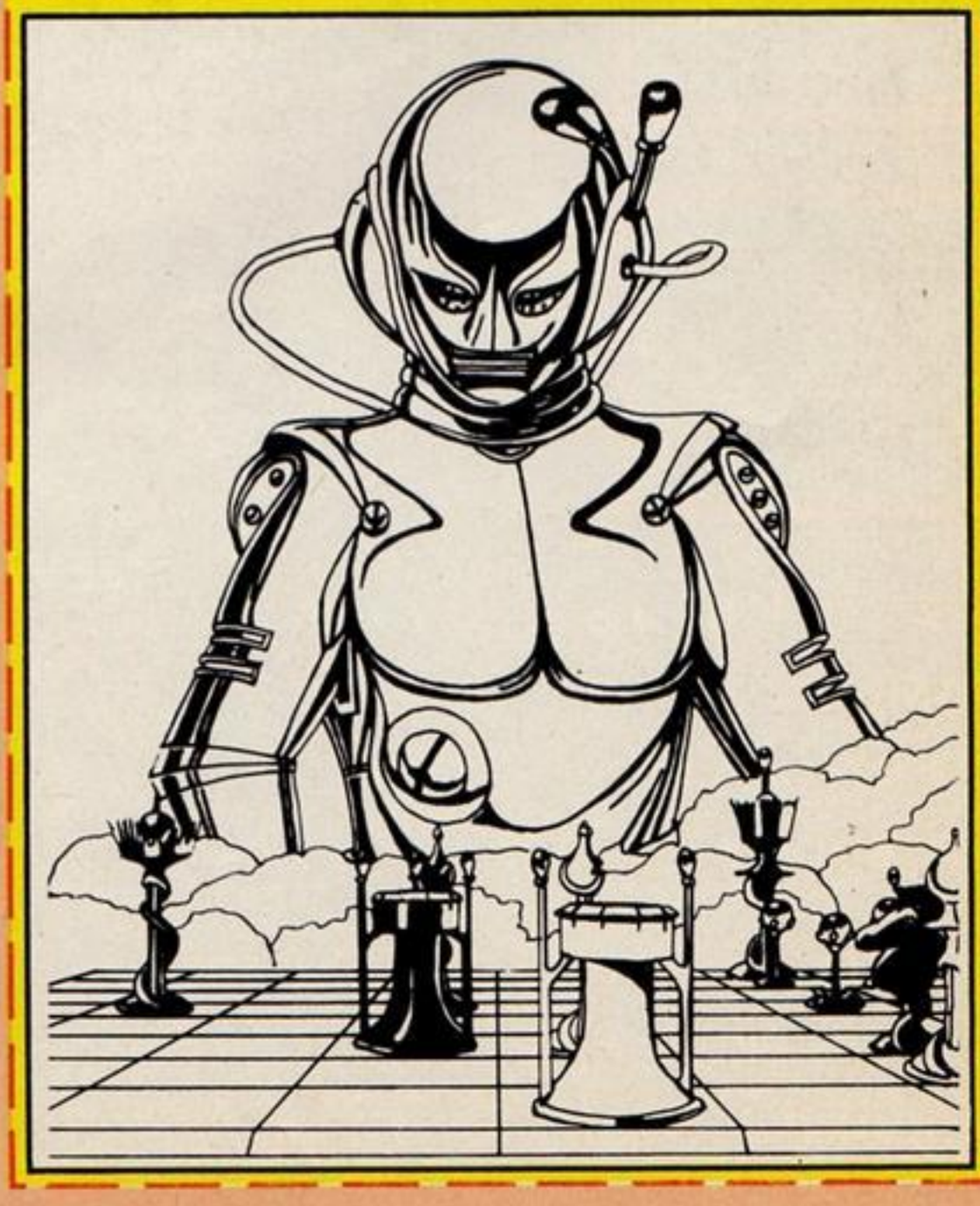

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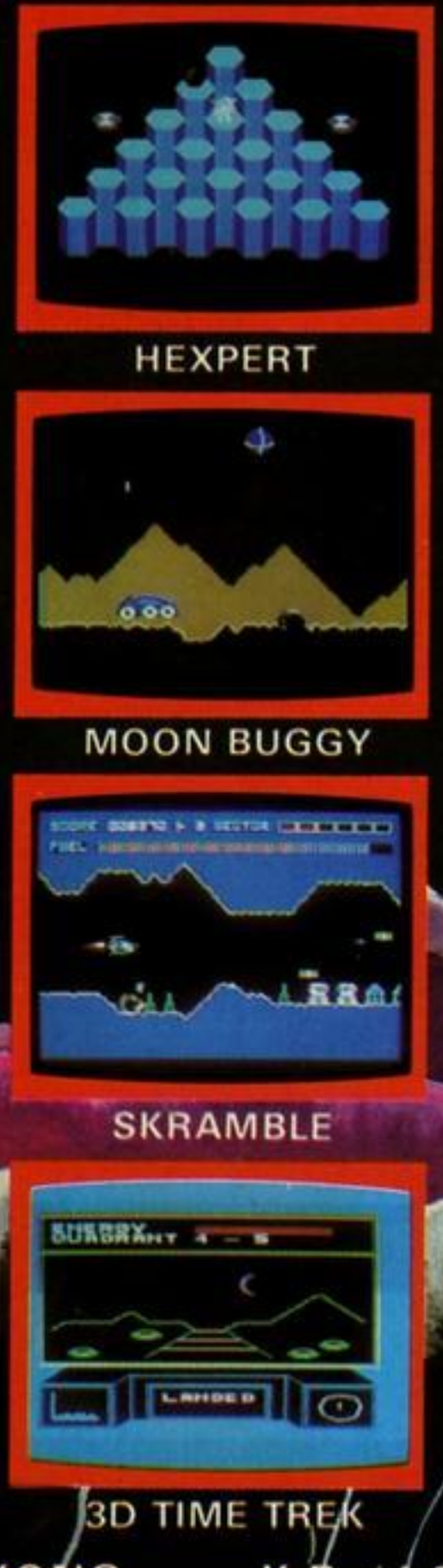

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Special collections

Tapes containing several programs for the price of one can mean good value for money — if the programming's up to standard. Our reviewers look at some recent collections

Fun-Pac TI-99/4A £6.95

Virgin Games, 61-63 Portobello Road, London W11

Fun-Pac contains two programs: Supermouse and Let's Go to the Races.

Supermouse features those two cartoon cat and mouse favourites, Tom and Gerry.

Gerry has the task of eating pieces of cheese, which are randomly distributed in a simple maze, while pursued by Tom. If all the pieces are eaten then Gerry becomes Supermouse and chases Tom.

At various locations in the maze are mouseholes through which only Gerry may pass. The number of these decrease through the six skill levels as the cheeses to eat increase.

Failing to eat sufficient cheese, however, causes Gerry to slow down, making capture by Tom more likely.

Let's Go to the Races is a game for up to six players. Each player in turn controls a horse along a set racecourse, obtaining the least number of penalties in the shortest possible time.

There are a possible nine courses to choose from, each of which has six laps to complete by moving across and down the screen, but having a different layout of hurdles and water-jumps.

As each horse finishes the course the time taken and total score, including penalty points, are displayed, but when all horses have run no overall winner is declared. **J.W.**

instructions	90%
playability	70%
graphics	70%
value for money	75%

★ ★ ★ ★

Syphax 48K Spectrum £3.50

Rosetta Software, 2 Rosetta Close, Wivenhoe, Essex CO79RX

Rosetta is the trade name of Mark Alston, aged 13, who has produced an extremely praiseworthy package in Syphax. It's dial-a-page Teletext style magazine of puzzles, facts, quizzes, demonstration programs and so on.

Loading takes two or three minutes but is very reliable. To start, you simply enter your chosen three-digit page number from the displayed index and the selected subject is screened very quickly.

Enter an alternative reference and your Spectrum quickly "thumbs through" the magazine to produce your next selection.

Mark has done a splendid job in compiling Syphax, and I enjoyed browsing through the magazine.

But the main bonus is that the program is designed so that you can alter any page to suit your needs, so that it would form a good base for a family, club or class magazine or for computer pen-pal correspondence.

It may also prove of value to a business user, with each page holding customer names and addresses and other information.

At the price, Syphax is a bargain, and I look forward to Rosetta's next offering with great interest. **D.J.**

instructions	90%
playability	90%
display	90%
value for money	95%

★ ★ ★ ★ ★

Octal-1/Keys of the Castle TI-99/4A (Extended BASIC) £11

By PS Software, from Stainless Software, 10 Alstone Road, Stockport, Cheshire SK4 5AH

The aliens appear as invading Spyders in Octal-1, which has optional keyboard or joystick control.

From your base in the centre of the screen, you must ward off three waves of attack for which different points are scored.

Your Octal base may be rotated through eight positions, either left or right. You fire with twin Octazer bolts. The game ends when your base is destroyed and the three highest scores shown.

In Keys of the Castle you have three castles to explore. Each has six floors with a maze layout and increasing hazards at each level including darkened hallways and electrified walls.

Your objective is to explore all the castles. To gain access to the next level, keys have to be collected from rooms, some of which are guarded, and taken to their correspondingly coloured chests.

All your explorations are made in a race against the clock. The game end either when you succeed in your mission, sustain ten wounds, or run out of time. A final score is given. **J.W.**

instructions	95%
playability	90%
graphics	90%
value for money	100%

★ ★ ★ ★ ★

Games Tape One TI-99/4A £3.50

Firefly, 48 Dorset Street, London W1H 3FH

Games Tape One contains three programs: Trapt, Star-Storm and Astro-Run. As each is fairly short, all are loaded together then selected from a menu.

Trapt I found by far the best of the three. The object is to move a man round a courtyard while the computer attempts to block your path with his men. You score for each move until completely surrounded.

The computer may not be the most witty of opponents, yet is challenging enough to make this a simple but amusing game to play.

Star-Storm is somewhat slow-moving, and could be made more difficult than it is. You must avoid oncoming stars as they scroll up the screen towards your space-ship.

Although clusters of stars make a difficult path in the middle of the screen, by staying towards the edges they become so sparse as to hardly offer any challenge at all.

In Astro-Run you manoeuvre from side to side avoiding asteroid showers which gradually fill the screen. Each complete traverse constitutes an astro-run. Should you attempt to move off the screen the program crashes with a BAD VALUE IN 8440.

Overall, worth buying for Trapt alone but neither of the other two games has that same addictive flavour. **J.W.**

	80%
instructions	60%
playability	60%
graphics	70%
value for money	

★ ★ ★ ★

Task Force/ Demolish/ Cosmos 32K BBC £7.50

R. H. Electronics, Chesterton Mill, French's Road, Cambridge CB4 3NP

RH's three-in-one cassette gives three fairly standard games.

Task Force is a tactical air/sea battle played on a coloured map. Two players take turns to move a fleet of six ships round the coastline of an island.

Ships, guns and aircraft may be used to destroy enemy vessels, with all controls prompted for on-screen.

Full instructions are given in a well-written program which nonetheless suffers from slowness and average graphics, and might prove slightly boring after a few hours playing.

The second game, Demolish, is a cross-breed of Invaders and Breakout, where you must destroy crumbling walls with your laser base. This game uses 'block' graphics.

The last game, Cosmos, is a rather weird version of Space Invaders, with huge jerky aliens and a slow-firing base.

All the games in this package suffer from the lack of originality inherent in many software releases, but do offer three games for the price of one. Perhaps new BBC owners might enjoy them. **D.A.**

instructions	70%
playability	55%
graphics	45%
value for money	65%

★ ★ ★

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Children of today are fascinated by computers. With micros already used in schools throughout the country their involvement in education and in our daily lives is increasing all the time.

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The Clever Clogs series can be used by your whizzkid on their own with initial help from you.

Price of each program £6.50 (incl Vat, P & P). Overseas orders £1 extra per tape for airmail delivery. Money back guarantee.

Trade enquiries invited.

SPECIAL LAUNCH OFFER Buy 3 games – get one C20 blank tape FREE!

PARTY TIME for Age 3 yrs +

With parent's help even tiny tots will love to play these party games. They can 'blow out' the candles on a cake, sing along with nursery rhymes, even draw on the screen. If you have a printer you can record your Clever Clogs artistic efforts and watch their progress as they develop new skills. Because each Clever Clogs program offers a choice of games to play and has the facility to increase the 'difficulty' factor your children won't grow out of them so quickly.

JUNGLE JUMBLE for Age 5 yrs +

At this age less parental help and guidance are necessary. Your child will continually be seeking new experiences and will enjoy his/her mind being challenged. Clever Clogs satisfies both criteria.

Correct answers to questions build up a picture of an animal - is it a real one? That's up to the player. Take your choice and create your own unique zoo. Then enter the great Safari Park chase . . . the possibilities are endless!

***WHIZZ QUIZ for Age 7 yrs +**

A game of skill and chance for 1-4 players that will get your whizzkids thinking hard. But Clever Clogs of this age like a challenge. You can proceed from the general knowledge questions already programmed and you can enter up to 100 questions of your own - there's tremendous scope here for the really clever, Clever Clogs! Watch them develop their three "R's" and in a way that will fascinate you as much as them.

*Also for ZX 81 (16K)

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Computertutor, P.O. Box 3, St. Neots, Huntingdon, Cambs. PE19 3NW Telephone: (0480) 213969

Will you be the hero of the galaxy?

We're all depending on you and your starship. David Wilkinson's game for the VIC-20, plus 3K of RAM, will decide our fate

You are alone, 10,000 miles from Earth, and somewhere out there are 20 Klingon ships. If you don't find and destroy them they'll wreak mayhem on the whole of your galaxy.

Although you don't know their positions, your ship is equipped with short and long range scans... plus lasers and missiles.

Your short range scan gives you a visual display of the quadrant you are in and the long range scan gives you the number of Klingons and starships in your quadrant and the eight adjoining quadrants.

In each quadrant there are two numbers. The one on the left tells you the number of Klingon ships and the number on the right is the total of starships.

You can choose a time limit, one to eight minutes, by which you must shoot a ship. This also increases your energy level.

You can also choose a difficulty level, from one (hard) to easy (eight).

The galaxy is a five by 12 grid of quadrants and each quadrant is an eight by eight grid of co-ordinates.

How to move:

Right add the required number of co-ordinates to X
Left subtract required number from X
Down add required number to Y
Up subtract required number from Y

Note: after shooting a ship enter it into the log record by a long range scan of the quadrant.

How it works

1-16 set up variables
17-55 menu
100-135 move
150-202 short range scan
250-298 long range scan
300-350 laser
400-445 missile
450-470 log record
500-530 current status
700-810 messages
1000-1230 sound effects
1500-1600 messages
9100-9200 title pages

Main variables

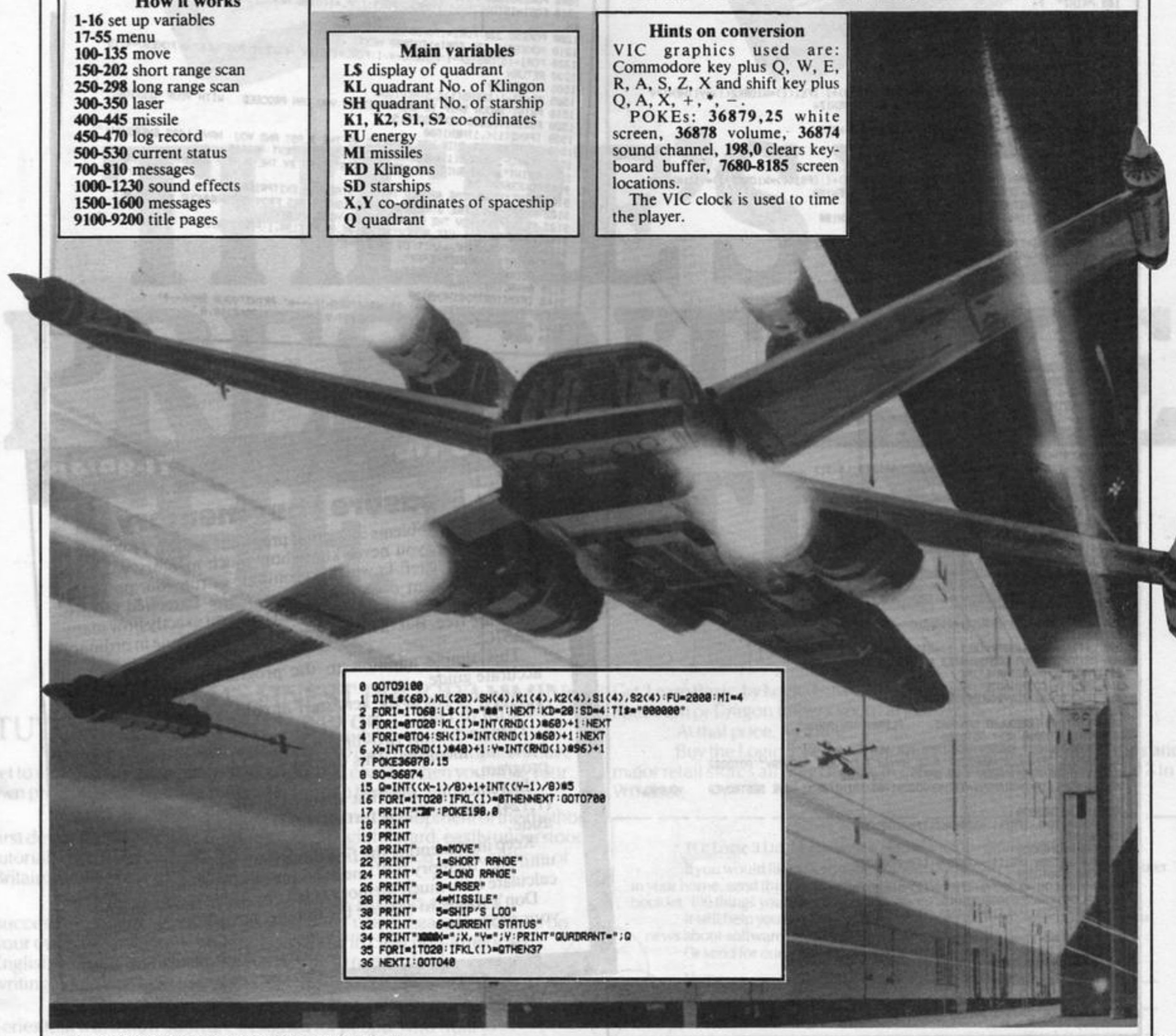
LS display of quadrant
KL quadrant No. of Klingon
SH quadrant No. of starship
K1, K2, S1, S2 co-ordinates
FU energy
MI missiles
KD Klingons
SD starships
X,Y co-ordinates of spaceship
Q quadrant

Hints on conversion

VIC graphics used are: Commodore key plus Q, W, E, R, A, S, Z, X and shift key plus Q, A, X, +, *, –.

POKEs: **36879,25** white screen, **36878** volume, **36874** sound channel, **198,0** clears keyboard buffer, **7680-8185** screen locations.

The VIC clock is used to time the player.



```
0 GOTO9100
1 DIML$(60),KL(20),SH(4),K1(4),K2(4),S1(4),S2(4):FU=2000:MI=4
2 FORI=1TO60:L$(I)="**":NEXT:KD=20:SD=4:TI$="000000"
3 FORI=0TO20:KL(I)=INT(RND(1)*60)+1:NEXT
4 FORI=0TO4:SH(I)=INT(RND(1)*60)+1:NEXT
6 X=INT(RND(1)*40)+1:Y=INT(RND(1)*96)+1
7 POKE36878,15
8 SO=36874
15 Q=INT((X-1)/8)+1+INT((Y-1)/8)*5
16 FORI=1TO20:IFKL(I)=0THENNEXT:GOTO700
17 PRINT"[CLR]":POKE198,0
18 PRINT
19 PRINT
20 PRINT"   0=MOVE"
22 PRINT"   1=SHORT RANGE"
24 PRINT"   2=LONG RANGE"
26 PRINT"   3=LASER"
28 PRINT"   4=MISSILE"
30 PRINT"   5=SHIP'S LOG"
32 PRINT"   6=CURRENT STATUS"
34 PRINT"[RVS]X=";X,"Y=";Y:PRINT"QUADRANT=";Q
35 FORI=1TO20:IFKL(I)=0THEN37
36 NEXTI:GOTO40
```

A rebel fighter goes in to attack in Star Wars

VIC-20 PROGRAM

```
 37 IFKW=1THEN40
 38 PRINT"■■DANGER KLINGONS!!":PRINT"YOU HAVE LOST";
 39 I=INT(RND(1)*100)+50:FU=FU-I:PRINTI:PRINT"UNITS OF FUEL■":KW=1
 40 GETA$:IFA$=""THEN40
 42 IFTI>TM*3600THENGOTO800
 45 IFA$="0"THEN100
 46 IFA$="1"THEN150
 47 IFA$="2"THEN250
 48 IFA$="3"THEN300
 49 IFA$="4"THEN400
 50 IFA$="5"THEN450
 51 IFA$="6"THEN500
 55 GOTO40
100 PRINT"■"
101 PRINT"INPUT COORDINATES OF  REQUIRED POSITION"
105 INPUT"X COORDINATE=";X1
110 INPUT"Y COORDINATE=";Y1
115 IFX1>40ORX1<1ORY1>96ORY1<1THENPRINT"■■YOU HAVE FALLEN OUT OFTHE UNIVERSE":EN
D
120 FU=FU-INT((((X1-X)↑2+(Y1-Y)↑2)↑.5)/2)
125 X=X1:Y=Y1
130 IFFU<0THENPRINT"■■YOU HAVE RUN OUT OF   FUEL":END
135 GOTO15
150 PRINT"■■■■";
155 PRINT"    12345678"
156 PRINT"   ┌────────┐"
157 PRINT" 1┤        │"
158 PRINT" 2┤        │"
159 PRINT" 3┤        │"
160 PRINT" 4┤        │"
161 PRINT" 5┤        │"
162 PRINT" 6┤        │"
163 PRINT" 7┤        │"
164 PRINT" 8┤        │"
165 X1=X-INT((X-1)/8)*8:Y1=Y-INT((Y-1)/8)*8
166 POKE7771+X1+(Y1*22),65
168 KL=0:FORI=1TO20:IFKL(I)=QTHENKL=KL+1
170 NEXT:IFKL=0THEN185
172 FORI=1TOKL
174 K1(I)=INT(RND(1)*8)+1:K2(I)=INT(RND(1)*8)+1:IFK1(I)=X1ORK2(I)=Y1THEN174
176 FORL=0TOI-1:IFK1(I)=K1(L)ORK2(I)=K2(L)THEN174
178 NEXTL,I
180 FORI=1TOKL:POKE7771+K1(I)+(K2(I)*22),88:NEXT
185 SH=0:FORI=1TO4:IFSH(I)=QTHENSH=SH+1
186 NEXT:IFSH=0THEN202
188 FORI=1TOSH
190 S1(I)=INT(RND(1)*8)+1:S2(I)=INT(RND(1)*8)+1:IFS1(I)=X1ORS2(I)=Y1THEN190
192 FORL=0TOI-1:IFS1(I)=S1(L)ORS2(I)=S2(L)THEN190
194 NEXTL:IFKL=0THEN200
196 FORL=1TOKL:IFS1(I)=K1(L)ORS2(I)=K2(L)THEN190
198 NEXTL
200 NEXTI:FORI=1TOSH:POKE7771+S1(I)+(S2(I)*22),81:NEXT
202 POKE198,0:WAIT198,1:POKE198,0:GOTO15
250 PRINT"■"
252 PRINT"■■■■      ┌─┬─┬─┬─┐"
253 PRINT"          │ │ │ │ │"
254 PRINT"          ├─┼─┼─┼─┤"
255 PRINT"          │ │ │ │ │"
256 PRINT"          ├─┼─┼─┼─┤"
257 PRINT"          │ │ │ │ │"
258 PRINT"          └─┴─┴─┴─┘"
260 Q1=Q:GOSUB294:PRINT"■■■■■■■■■■■■■■■■■■■■";L$(Q1)
262 IFX<9ORY<9THEN266
264 Q1=Q-6:GOSUB294:PRINT"■■■■■■■■■■■■■■■■■■■■";L$(Q1)
266 IFY<9THEN270
268 Q1=Q-5:GOSUB294:PRINT"■■■■■■■■■■■■■■■■■■■■";L$(Q1)
270 IFY<9ORX>32THEN274
272 Q1=Q-4:GOSUB294:PRINT"■■■■■■■■■■■■■■■■■■■■";L$(Q1)
274 IFX<9THEN278
276 Q1=Q-1:GOSUB294:PRINT"■■■■■■■■■■■■■■■■■■■■";L$(Q1)
278 IFX>32THEN282
280 Q1=Q+1:GOSUB294:PRINT"■■■■■■■■■■■■■■■■■■■■";L$(Q1)
282 IFX<9ORY>88THEN286
284 Q1=Q+4:GOSUB294:PRINT"■■■■■■■■■■■■■■■■■■■■";L$(Q1)
286 IFY>88THEN290
288 Q1=Q+5:GOSUB294:PRINT"■■■■■■■■■■■■■■■■■■■■";L$(Q1)
290 IFX>32ORY>88THEN293
292 Q1=Q+6:GOSUB294:PRINT"■■■■■■■■■■■■■■■■■■■■";L$(Q1)
293 POKE198,0:WAIT198,1:POKE198,0:GOTO15
294 KL=0:FORI=1TO20:IFKL(I)=Q1THENKL=KL+1
295 NEXT
296 SH=0:FORI=1TO4:IFSH(I)=Q1THENSH=SH+1
297 NEXT
298 L$(Q1)=RIGHT$(STR$(KL),1)+RIGHT$(STR$(SH),1):RETURN
300 PRINT"■■INPUT COORDINATES OF  LASER BEAM":KW=0
305 INPUT"X-COORDINATE";X2
310 INPUT"Y-COORDINATE";Y2
312 IFX2<0ORX2>80RY2<0ORY2>8THEN316
314 GOTO320
316 PRINT"■■ IRREGULAR COMMAND.    PLEASE TRY AGAIN"
318 FORI=1TO3000:NEXT:GOTO300
320 PRINT"■INPUT ENERGY REQUIRED FOR BEAM"
322 INPUTL:IFFU-L<0THENPRINT"■YOU HAVEN'T ENOUGH    ENRGY":GOTO322
323 IFL<0THENPRINT"■DON'T BE DAFT!!!":GOTO322
324 FU=FU-L:IFX2=X1ANDY2=Y1THENGOSUB1200:PRINT"■YOU HAVE DESTROYED    YOURSELF!!
!":END
325 IFKL=0THEN330
326 FORI=1TOKL:IFK1(I)=X2ANDK2(I)=Y2THEN335
328 NEXTI
330 IFSH=0THEN350
332 FORI=1TOSH:IFS1(I)=X2ANDS2(I)=Y2THEN340
334 NEXTI:GOTO350
335 P=INT(((X1-K1(I))↑2+(Y1-K2(I))↑2)↑.5)*20
336 IFL<PTHENGOSUB1000:GOTO15
337 FORI=1TO20:IFKL(I)=QTHENKL(I)=0:GOTO339
338 NEXTI
339 GOSUB1200:KD=KD-1:GOTO15
340 P=INT(((X1-S1(I))↑2+(Y1-S2(I))↑2)↑.5)*20
341 IFL<PTHENGOSUB1000:GOTO15
342 FORI=1TO4:IFSH(I)=QTHENSH(I)=0:GOTO346
343 NEXTI
346 FU=FU+500:TI$="000000"
347 GOSUB1200:SD=SD-1:GOTO15
350 GOSUB1000:GOTO15
400 PRINT"■":KW=0
410 IFMI=0THENPRINT"■■YOU HAVE NO MISSILES    LEFT!!!":FORI=1TO3000:NEXT:GOTO15
412 IFRND(1)<.15THENPRINT"■MALFUNCTION-MISSILE   SELF DESTRUCTED!!!":GOTO1500
415 MI=MI-1
420 FORI=1TO20:IFKL(I)=QTHENKL(I)=0:KD=KD-1
425 NEXTI
430 FORI=1TO4:IFSH(I)=QTHENSH(I)=0:FU=FU+500:SD=SD-1:TI$="000000"
435 NEXTI
440 PRINT"■EVERYTHING IN SIGHT   ELIMINATED!!!"
442 GOSUB1210:GOTO15
445 FORI=1TO3000:NEXT:GOTO15
450 PRINT"■";
455 FORI=1TO60:PRINT"  "L$(I);                                    ";
460 IFI/5=INT(I/5)ANDI<>60THENPRINT"
470 NEXTI:PRINT"■":POKE198,0:WAIT198,1:POKE198,0:GOTO15
500 PRINT"■■■    CURRENT STATUS"
505 PRINT"
510 PRINT"■■ FUEL="FU
512 PRINT" MISSILES="MI
515 PRINT" KLINGONS="KD
520 PRINT" STAR SHIPS="SD
525 PRINT" TIME EXPIRED="LEFT$(RIGHT$(TI$,4),2)":"RIGHT$(TI$,2)
530 POKE198,0:WAIT198,1:POKE198,0:GOTO15
700 PRINT"■■■   WELL DONE"
705 PRINT"■■YOU HAVE KILLED ALL   THE KLINGONS."
710 PRINT"■■■■":END
800 PRINT"■■■YOU HAVE BEEN IN SPACETOO LONG INBETWEEN    RESTS■■■■"
810 END
1000 POKE50,220:FORI=1TO700:NEXT
1010 FORI=15TO0STEP-1:POKE36878,I:FORL=1TO100:NEXTL,I:POKE50,0:POKE36878,15:RETU
RN
1200 POKE50,220:FORI=1TO700:NEXT:POKE50,0
1210 POKE50+3,170:FORI=1TO2000:NEXT:
1220 FORI=15TO0STEP-1:POKE50+4,I:FORL=1TO100:NEXTL,I:POKE50+3,0:POKE50+4,15
1230 RETURN
1500 GOSUB1210
1505 MI=MI-1:IFRND(1)<.5THEN1550
1510 PRINT"■YOUR SHIP IS UNDAMAGEDAND YOU CAN PROCEED   WITH YOUR MISSION!!!"
1520 FORI=1TO2000:NEXT:GOTO15
1550 IFRND(1)<.1THEN1600
1560 PRINT"■YOUR SHIP WAS DAMAGED BY THE BLAST AND YOU  HAVE LOST ENERGY!!!"
1570 FU=FU-INT(RND(1)*400)+200:FORI=1TO3000:NEXT:GOTO15
1600 PRINT"■YOUR SHIP HAS BEEN    DESTROYED BY THE BLAST":END
9100 POKE36879,25
9101 PRINT"■■WELCOME ABOARD THE    STARSHIP EXITPRISE!!"
9102 PRINT"■YOU ARE STRANDED 10000LIGHT-YEARS FROM EARTH■■YOUR MISSION■■"
9103 PRINT"DESTROY THE KLINGONS  IN YOUR GALAXY"
9104 PRINT"■■     HIT A KEY":POKE198,0:WAIT198,1:POKE198,0
9110 PRINT"■■■TIME LIMIT IN MINS 1-8"
9115 PRINT" 1=HARD 0=EASY"
9120 GETA$:IFA$=""THEN9120
9130 A=VAL(A$):TM=A
9140 IFTM<1ORTM>8THEN9120
9145 PRINT"■KLINGON----↑":PRINT"STARSHIP---■":PRINT"YOUR SHIP--↑"
9150 PRINT"■■■    HIT A KEY":POKE198,0:WAIT198,1:POKE198,0
9200 GOTO1
```

Micro Tip — TI-99/4A

Measure your memory

One of the problems in writing programs for the TI-99/4A in TI BASIC is you never know how much memory you have used, or have left in which to continue or run your program.

This problem does not arise with the Extended BASIC module, since the SIZE command tells you exactly how many bytes are free. But there is a way that it can be done in ordinary BASIC.

This simple addition to the program will give a fairly accurate guide.

Add this line at the very start of your program:

10 DIM (0,124)

Using a dummy two-dimensional array, this sets aside 1,000 bytes of memory. This memory cannot be used by the program.

Incrementing the first dimension of the array, ie DIM (1,124), means that a further 1,000 bytes of memory are set aside.

Keep incrementing the first dimension and run the program until the "memory full" message appears. You are then able to calculate how much memory is left for use in the program.

Don't forget to remove the dummy array after completing your program.

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HCW39

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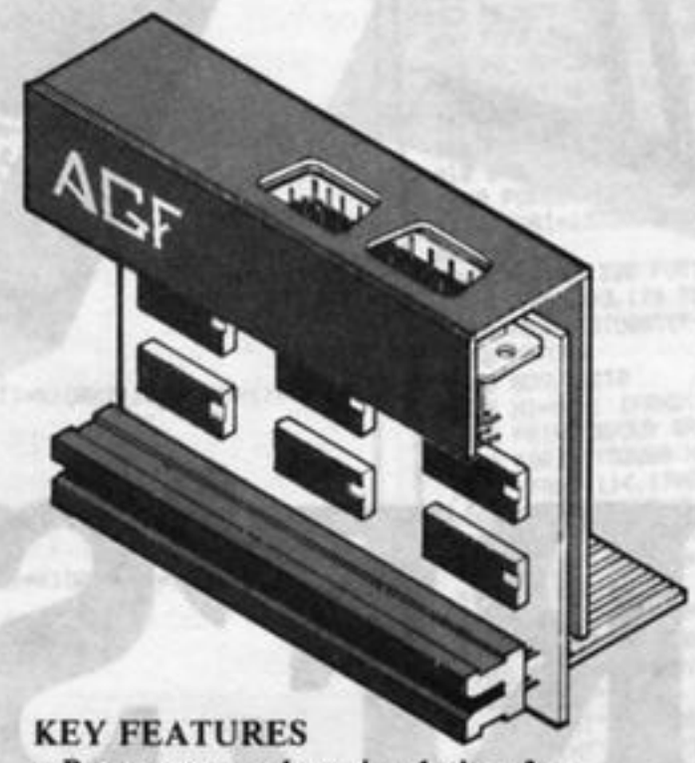
A second Joystick may be connected in the 'Player 2' position which simulates in a parallel fashion keys T-Y-U-I-P. This will allow you to play a whole new generation of two player games.



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These cassettes have short programs to load before the chosen game which will convert it to use the cursor keys and therefore become compatible with the Interface Module II.

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Horace Goes Skiing	† Pssst
Spectres	† 3D Combat Zone
Penetrator	† Invaders

† *Will require 48K Memory.*

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	SOFTWARE:		
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24 Crown Street, Ipswich, Suffolk IP1 3LD

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Chelsea Micros Ltd
14 Jerdan Place, London SW6 1BH

Computers of Wigmore Street
87 Wigmore Street, London W1H 9FA

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1 Great Colman Street, Ipswich, Suffolk IP4 2AA

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67 Friargate, Preston, Lancashire PR1 2AT

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24 Gloucester Road, Brighton BN1 4AQ

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7 Queens Parade, London Road, Waterlooville, Hants

Melgray Hi-Tech Ltd
49 Broad Street, Hereford HR4 9AR

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296 Gloucester Road, Horfield, Bristol

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74 Green Lane, Tettenhall, Wolverhampton

Screen Scene
144 St George's Road, Cheltenham Gloucestershire GL50 3EL

Screens
6 Main Avenue, Moor Park, Northwood Middlesex.

Syntax Computers
76 Cornwall Street, Plymouth PL1 1NS

Teleco Video
53 Maple Road, Penge, London SE20

Telford Electronics & Computing
26a Bradford Street, Shipnal, Shropshire TF11 8AU

The Computer Shop
Unit 25, Handyside Arcade, Percy Street, Newcastle-upon-Tyne NE1 4PZ

The Computer Centre (Humberside) Ltd
26 Anlaby Road, Hull HU1 2PA

Don't dawdle... there's cargo to be shipped

Can you steer a steady course? Type in Ron Ridge's program for either model of the Spectrum and see if you are a suitable candidate for life aboard ship

This is a fast moving game in which you have to move 12 pieces of cargo from three different ports to a city dock.

The 12 ships in the fleet start their voyage from the city dock and are steered to berth at any of the three ports with narrow entrances.

When the cargo has been loaded the ship is steered back to the city dock with an equally narrow entrance.

Collision with the quay results in either the loss of a ship or a ship and cargo depending on whether you are sailing north or south.

A fair level of skill is required and the game is addictive.

Graphic notes: 70 caps shift 5; 120 caps shift 3,8, caps shift 6,6,8, caps shift 3; 135 caps shift 6.

Hints on conversion

Because no user defined graphics are required (they can be added if desired) the programme is easily adapted to other computers and can be used as it stands on the ZX81 with some substitutions for quay and cargo graphics.

Variables

SH ships
K cargo
N movement north
S movement south
AS,BS,CS cargo at three ports (graphics)
A,B,C number of cargo at each port

How it works

10 GOSUB for instructions
30-90 set up variables
110-150 set up screen
160-210 move ships south
220-260 calculate final position of southbound ship and if successful, load cargo
280 missed dock — ship lost
300-355 move ships north to city dock
360-395 successful landing at city dock
490 reduce ships if landings successful
500-510 confirm safe delivery of cargo
520 end of game
530 return for next voyage if any ships remaining
540 option to replay or end
570-630 print full instructions

```
  5 REM FAST CARGO    RON RIDGE
 10 CLS : GO SUB 570
 20 PAPER 5: BORDER 7: INK 0
 30 LET SH=1: LET K=0:
 40 LET N=120
 50 LET S=120
 60 LET A=4: LET B=A: LET C=B
 70 LET A$="■■■■"
 80 LET B$=A$
 90 LET C$=B$
100 CLS
110 PRINT TAB 0; PAPER 7; INVER
SE 1;" SHIP No. ";SH;TAB 23;"CAR
GO- ";K;" "
120 PRINT INK 1;AT 1,13;"▄▄▄▄
";AT 0,15;"▐▌"
130 PRINT INK 2;AT 20,3;A$( TO
A);AT 20,13;B$( TO B);AT 20,23;C
$( TO C)
135 FOR Q=0 TO 31: PRINT AT 21,
Q;"▀": NEXT Q
140 PLOT 24,21: DRAW 0,-4: PLOT
27,21: DRAW 0,-4: PLOT 104,21:
DRAW 0,-4: PLOT 107,21: DRAW 0,-
4: PLOT 184,21: DRAW 0,-4: PLOT
187,21: DRAW 0,-4
150 PLOT 124,160: PLOT 125,160:
PLOT 130,160: PLOT 131,160
160 LET S=120
170 FOR F=158 TO 11 STEP -1
180 IF INKEY$="x" THEN LET S=S-
1
190 IF INKEY$="m" THEN LET S=S+
1
200 PLOT S,F
210 NEXT F
220 IF S=25 OR S=26 THEN LET A=
A-1
230 IF S=105 OR S=106 THEN LET
B=B-1
240 IF S=185 OR S=186 THEN LET
C=C-1
250 IF A=-1 OR B=-1 OR C=-1 THE
N GO TO 430
260 IF S=25 OR S=26 OR S=105 OR
S=106 OR S=185 OR S=186 THEN BE
EP .5,5: GO TO 300
270 PAUSE 50
280 PRINT PAPER 7; INK 1; FLASH
1;AT 10,7;"LOADING BAY MISSED";
AT 12,11;"SHIP LOST": PAUSE 100
290 GO TO 490
300 LET N=S+3
310 FOR P=3 TO 160
320 IF INKEY$="x" THEN LET N=N-
1
330 IF INKEY$="m" THEN LET N=N+
1
340 PLOT N,P
350 NEXT P
355 FOR U=1 TO 20 STEP 1
360 IF N=126 OR N=127 OR N=128
THEN BEEP .05,U: BEEP .1,-U: NEX
T U: GO TO 380
370 GO TO 460
380 PAUSE 50
390 PRINT PAPER 6; INK 1; FLASH
1;AT 4,7;" CARGO DELIVERED "
395 PRINT INK 2; FLASH 1;AT 0,1
5;"■ "
400 PAUSE 200
410 LET K=K+1
420 GO TO 100
430 IF A=-1 THEN LET A=0
440 IF B=-1 THEN LET B=0
450 IF C=-1 THEN LET C=0
460 PRINT INK 2; PAPER 7; FLASH
1;AT 10,1;"LANDING BAY MISSED C
ARGO LOST": PAUSE 100
480 PAUSE 100
490 LET SH=SH+1
500 IF SH=13 THEN CLS
510 IF SH=13 THEN PRINT PAPER 6
; INK 1;AT 10,8;" VOYAGE OVER. "
;AT 12,4;" CARGO DELIVERED = ";K
;" "
520 IF SH=13 THEN GO TO 540
530 GO TO 100
540 PRINT AT 20,5;"ANOTHER GAME
? (Y/N) ": PAUSE 0
550 IF INKEY$="Y" OR INKEY$="y"
THEN GO TO 20
560 IF INKEY$="N" OR INKEY$="n"
THEN CLS : PRINT PAPER 1, INK 6
;AT 10,3;" HAVE A SAFE VOYAGE HO
ME ": STOP
570 PRINT PAPER 6; INK 1;AT 1,9
;" FAST CARGO "
580 PRINT AT 3,1;"You have 12 p
ieces of cargo to  move from 3 d
ifferent ports to  the city dock
 at the top of the screen.";AT 8
,1;"Each ship must be steered to
 a  loading bay and then returne
d  to the city to be unloaded."
590 PRINT AT 12,1;"Docking must
 be made between  the black li
nes at every port."
595 PRINT AT 15,1;"You have 12
ships and gain an  extra ship f
or each piece of  cargo delive
red safely to the  city dock."
600 PRINT AT 20,3;"Use keys X a
nd M to steer."
610 PRINT #0;"  PRESS ANY KEY
TO BEGIN."
620 PAUSE 0
630 RETURN
```

Fun and games in space

Our reviewers give down-to-earth opinions of some games set in space

Attack on Alpha Centauri 32K BBC £7.95

Software Invasion, 50 Elborough Street, Southfields, London SW18 5DN

Is there no end to the number of variations possible on the arcade game Galaxians? This latest version from Software Invasion shows that the possibilities are by no means exhausted.

Throughout Attack on Alpha Centauri, the quality of the graphics is superb.

A very realistic moonscape is drawn from which a stream of very hostile-looking space wasps pour, and it is your task to shoot down as many as possible before your inevitable destruction.

The creatures attack by suddenly rushing forward and dropping bombs all round you. This is achieved by using perspective to create a pseudo-3D effect on the screen.

Each screen of creatures gets progressively more difficult, with more wasps attacking in a single formation.

Sound is also used with good effect, making the explosions very impressive. Even the title sequence has a stunning display.

The only criticism I have is that this game is basically centred on the Space Invaders/Galaxians theme, and possibly a little dated these days.

But I would thoroughly recommend it for anyone looking for a fast and challenging game. The graphics alone make it a worthwhile addition to anyone's games collection. **D.A.**

instructions	70%
playability	75%
graphics	98%
value for money	80%

★ ★ ★ ★

Missile Defence Spectrum £5.95

Anirog Software, 8 High Street, Horley, Surrey

Missile Defence is a conventional Space Invaders-type game in which you attempt to shoot down marauding aircraft, their smart bombs and showers of missiles before all your assets are wiped out by them.

All are accurately targeted on your installations, and to attack them you move a sight around the screen with the cursor keys.

Pressing the fire key then launches a missile from one of the three silos, and a convincing nuclear cloud appears in the target area, destroying anything nearby, and earning you some points for whatever you hit.

Very satisfying, but the enemy is still coming. If you survive, you start another round with fresh missiles and a higher level of difficulty.

The game can be played from the keyboard or a Kempston joystick. It loads easily and then offers a colourful but silent demonstration and a set of instructions to supplement those on the insert.

These repeat until you stop them to go into the main game, which has good sound effects and displays the present score and best score so far. **H.C.**

instructions	90%
playability	80%
graphics	70%
value for money	60%

★ ★ ★ ★

Vultures Commodore 64 plus joystick £6.95

J. Morrison Micros, 2 Glensdale Street, Leeds LS9 9JJ

This Space-Invader type game starts off with two rows of vultures along the top of the screen.

While you are moving back and forth along the bottom of the screen shooting them down, individual vultures suddenly start swooping down on you, dropping eggs.

If the eggs land on you, you lose one of your three lives. On the other hand, if you don't manage to shoot down a swooping vulture or avoid it, it will pick you up and carry you to eternity, with a corresponding loss of one life.

During the game, the top of the screen displays your current score and highest score to date. At the end of the game a list of players' names with their highest score is displayed in a Hall of Fame record.

The screen graphics were quite good, without being exceptional. More importantly, the colours chosen were sensible so that the action was clear and the displays easily readable.

The joystick action was fast and smooth.

The cassette was nicely packaged but there were no instructions, the rules becoming apparent as you played the game. The game was quite enjoyable but not particularly compulsive. **L.C.**

instructions	10%
playability	70%
graphics	80%
value for money	70%

★ ★ ★ ★

Stellar Triumph Commodore 64 £6.99

Romik, 272 Argyll Avenue, Slough, Berks

Rather a novel one: an arcade game for two.

The scenario is pretty standard. Take a couple of space ships and put them in an Asteroids-type arrangement.

Chuck in a few aliens, rocks, black holes and monoliths and make the game easy to customise and you've got it.

The aim is to simply slice up your opponent and anything else you find.

The nice touch is that you can set up the game to suit your own preferences. All parameters are adjustable: speed of ship, fire rate, inertia, how many aliens and gravity effects are just a few.

While the overall game instructions are minimal, the instructions for parameter changes are excellent.

An action freeze option is available if you want a rest during your game.

Graphically, the game is adequate but not mind-bending. Explosion effects were particularly banal.

There are options for both joysticks and keyboard or any combination thereof.

Not my idea of a great game, but arcade freaks should give it a look over. **A.W.**

instructions	65%
playability	75%
graphics	70%
value for money	80%

★ ★ ★

Starfighter 48K Oric £6.95

Durell Software, Castle Lodge, Castle Green, Taunton TA1 4AB

An impressive display shows your spaceship in the centre of the screen and an area of space immediately around you.

On the edge of the screen, among many flashing lights, are several gauges showing energy, shields, armaments and so on, as well as a small square showing where you and the bad guys are in the sector.

The object of the game is to zip around the galaxy chasing the nasties until you either kill them all or get killed trying.

As soon as you have killed all the aliens, you can move to the next sector simply by moving on to a stargate as soon as you find one.

The aliens can be killed in two ways: by the usual photon torpedoes or by the more interesting method of pressing the space bar when one of the alien craft is very close.

The screen changes to show a 3D display of you chasing the alien through space. You can then shoot him using your phasors whenever he strays into your sights.

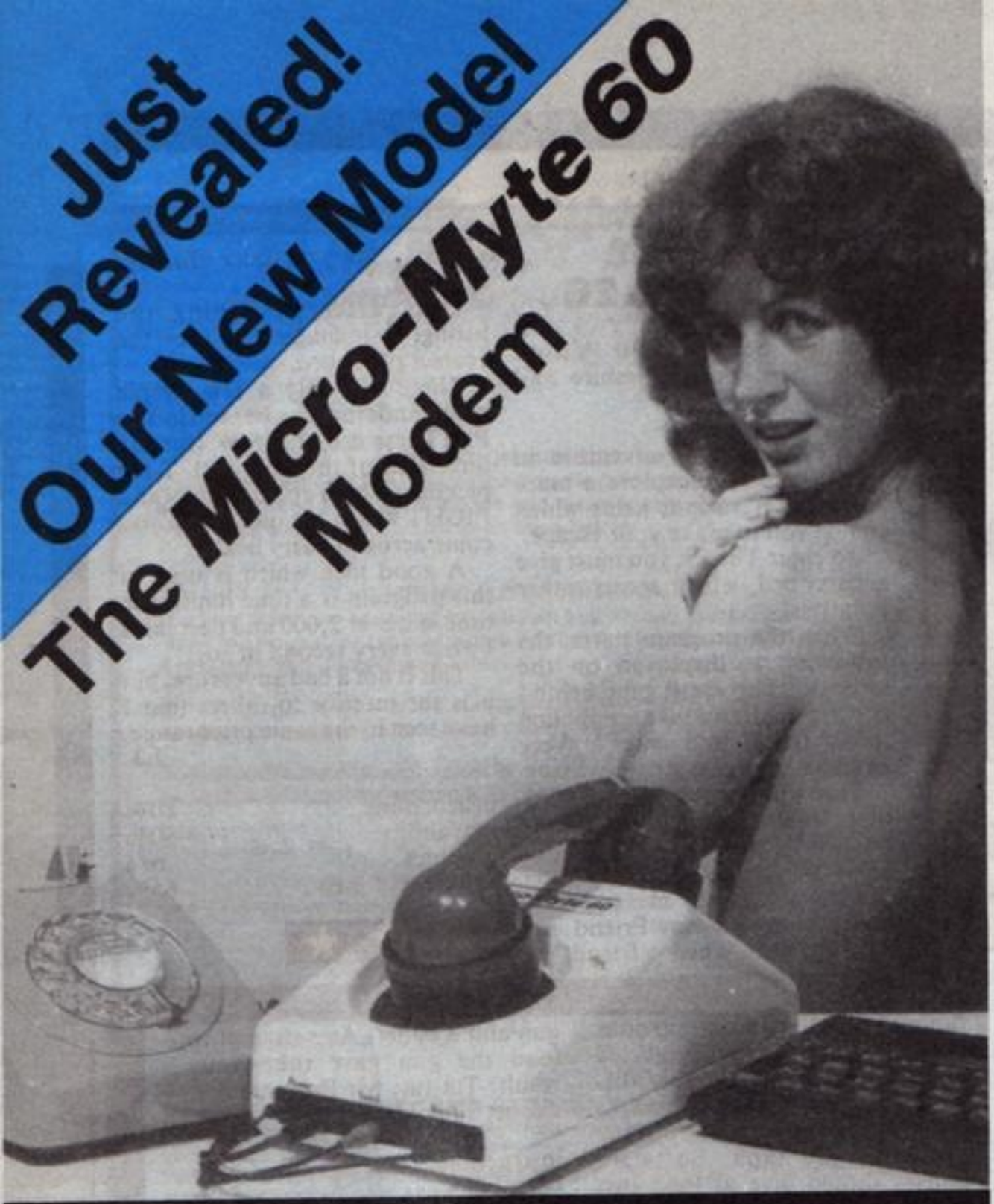
The main problem with this game is that it soon becomes apparent that there is not very much to do. The 3D is quite fun, but even that becomes boring after a few games.

The game would benefit greatly if you could use joysticks or if there was more variety, but as it stands it's nicely done but rather dull. **M.J.**

instructions	85%
playability	65%
graphics	80%
value for money	50%

★ ★

Just Revealed! Our New Model! The Micro-Myte 60 Modem



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The Pit
TI-99/4A £6

Stainless Software, 10 Alstone Road, Stockport, Cheshire SK4 5AH

The Pit is a text adventure in which you must explore a maze and recover various items which enable you to make your escape.

To enter The Pit you must give a password, which seems rather pointless.

When the program starts, the following is displayed on the screen: "The west gate behind you the water of a lake is bubbling speak friend and enter". Very strange!

This would lead you to think that "friend" (if anything) is the password. Indeed, when H (for help) is pressed, the computer displays "You missed the message. It was 'say Friend and enter'". But when "friend" is entered, the computer displays "Wrong"!

Only after examining the listing, I managed to find the correct password.

There are only a few simple commands that can be used in The Pit. These are N,E,S,W (for the directions of the compass), T for picking an item up, and RUN and FIGHT which are used when you come across a nasty beast.

A good idea which is used in this program is a time limit. The time starts at 2,000 and decreases by one every second or so.

This is not a bad adventure, but it is far inferior to others that I have seen in the same price range. **J.J.**

instructions	80%
playability	60%
graphics	n/a
value for money	65%

★ ★ ★

Fools Gold
Commodore 64
£6.99

Romik Software, 272 Argyll Avenue, Slough SL1 4HE

The game takes place in an old mine, which, while not the most original idea, does offer wide scope.

The inlay claims that there are over 150 rooms to explore. I didn't check the number, but there certainly are a lot of them. The description of each room was normally quite detailed but occasionally repetitive.

The idea of the game is to explore the caves and recover all the items of treasure hidden in the mine. You do this by giving the usual two-word commands.

There are various problems, such as locked doors and dangerous animals, to foil your efforts.

The game is purely textual and functions well without obvious bugs. The game is well protected and presented unbelievable difficulties when loading.

There was only one copy of the game on the tape. Software houses should give at least two copies of the game on the tape to allow for loading problems.

My other complaint was the use of LOAD when you want to load a saved game. In the mine are a gun and a bullet. Any attempt to load the gun gave the wrong result. Tut-tut, Mr Programmer, deduct 10 points. **A.W.**

instructions	65%
playability	75%
graphics	n/a
value for money	90%

★ ★ ★ ★ ★

Treasure Tombe
Dragon 32
£7.95

Dungeon Software, Milton House, St Johns Street, Ashbourne, Derbyshire DE6 1GH

A departure from usual adventure games, Treasure Tombe is a real-time adventure using low resolution graphics and text screen.

You must explore the 90 caves displayed on the screen. There are 32 pieces of treasure to be found and taken back to Room 1, your starting point and the only room free of monsters.

These unsavoury creatures move stealthily towards you and should be avoided as much as possible, as they sap your strength with every attack.

I could discuss the relative merits of using a full stop to represent wine, or indeed any of the other symbols used to denote objects, but still the game is interesting and enjoyable.

I have played similar games on earlier, more primitive computers and this game is not a great advance on the originals.

However, it is very playable, and a change from all the usual type of adventures.

Dungeon Software call Treasure Tombe a beginners' game, which I suppose is a fair classification, but believe me, the game is far from easy to complete. Being real time, you have little chance of making carefully thought out decisions. **C.G.**

instructions	80%
playability	70%
graphics	55%
value for money	60%

★ ★ ★

Alice in Wunderlab
Commodore 64
£7.50

Arthur Loosely, 18 Longlands Road, Sidcup, Kent

This is a text-based adventure game set in an experimental reactor laboratory. It rather cleverly combines the usual maze-type adventure with some extra features.

You are issued with a personal code and a reactor start-up code. Once you have started, the reactor problems develop, and it's a race against the meltdown time to prevent the inevitable big bang.

To do this you have to find your way through the maze of rooms, overcoming problems on the way, to locate a Time Machine.

This machine allows you to go back in time, if you know how, to a point where you can prevent the catastrophe.

There are three levels of difficulty for the game and I reckon even the first will take many hours to solve. Still, depending on how well you do you may get a medal.

Once you start moving through time, however, it's a different story. Some of the building work may be different. There can't be many games where you need separate maps for different years.

The scale of the game means that it takes a long time to load, four to five minutes, but if you like adventures it's worth it. I enjoyed this game as an interesting variation on the Dungeon and Dragons theme. **L.C.**

	70%
instructions	70%
playability	50%
graphics	70%
value for money	

★ ★ ★ ★

The Fabulous Wanda
Commodore 64
£7.95

Games Machine, Business and Technology Centre, Bessemer Drive, Stevenage, Herts

When I first saw the grandiose name I was filled with visions of great things. Unfortunately I was out of luck.

You play the part of some kind of pangalactic playboy who is dumped on a planet.

You have to accumulate cash to pay the customs man and to gain access to Wanda who is supposed to know the 'secret'.

By playing a sort of arcade game, you can get rid of the customs man. The other sum of cash must be found in the four bizarre establishments in the High street.

The game is supposed to be a sort of fantasy adventure, but your choice of action is severely limited, and the results depend more on luck than skill.

The idea of the game is good, but the programmer couldn't deliver the goods. A quick peep at the listing showed that the game was written inefficiently in BASIC.

The cassette inlay mentioned arcade action. Well, it might have been five years ago, but it certainly isn't now.

Graphically, the game was adequate but not exciting. In all, a great idea spoilt by weak programming and insufficient imagination. **A.W.**

instructions	70%
playability	55%
graphics	60%
value for money	40%

★ ★

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This program allows you to turn your Commodore 64 into an impressive synthesizer, as well as to experiment with sound effects easily and quickly.

The program is both fast and versatile, as you will appreciate from the following description.

Speed comes from a machine code routine. As sound rountines are virtually untranslatable from one machine to another, I decided that using code would not remove any major insight into the program.

The machine code gets a key and, if it is a note; collects note, octave, sound, waveform and envelope data from pre-POKEd files, and stores them in the sound registers. This means that playing can be smooth, quick and professional.

This playing can be interrupted to define a function. As the 64 has three sound channels, the first three rows (1 to −, Q to *, and A to =) represent a different sound and contain a full octave: A to G sharp. The keys found immediately after these cut the sound of that row.

Each row can have octave, envelope and waveform independently defined. Also, for ease and versatility, envelopes can be stored and recalled quickly.

The most interesting facet of the program is that tunes can be remembered and replayed.

To remember a tune press F4, and F6 when you have finished. F8 is pressed to recall the tune. For experimentation, envelopes, octaves and waveforms can be revised before you play back the tune.

An extra feature is that you can play back the tune at any speed (maximum speed increase usually 10 times) and so make yourself sound like a real professional! (N.B. sound cutoff is not remembered).

Note keys have auto repeat and predefined envelopes are smooth (long duration) so that notes are played at constant volume until the key is released, when the sound fades as per the envelope.

Thus, it is best to use a smooth envelope as a sharp envelope will repeat endlessly, sounding like a musical machine gun!

Extensive alterations can be made.

For instance, if you disagree with my note per key choice, DATA in lines 2310 to 2340 can be changed. Another idea is that keys on the bottom row could be defined to give instant changes during the tune. Many additions can be made, and the program can be used as a tool as well as a plaything.

Note: above each line using a graphic symbol is a REM to tell you what it does. These REMs can be deleted.

```
8 REM*  SYNTHESIZER  *
9 REM* BY DAVID REES *
10 FORN=0TO2
20 FORM=0TO255
30 READA:IFA=-1THEN60
40 POKE12032+N*256+M,A
50 NEXTM
60 NEXTN
70 DIMS1(100):DIMS2(100)
80 DIMR(400):DIMT(400)
100 POKE12800,1:POKE12801,2:POKE12802,3
105 O(0)=6:O(1)=5:O(2)=4
110 POKE13056,60:POKE13057,1:POKE13058,60
115 E(0)=0:E(1)=1:E(2)=2:S1(0)=60
120 POKE13059,1:POKE13060,10:POKE13061,15
125 S2(0)=1:S1(1)=60:S2(1)=1:S1(2)=10
130 POKE13312,0:POKE13313,7:POKE13314,14
135 S2(2)=15
140 POKE13568,33:POKE13569,33:POKE13570,33
145 W(0)=1:W(1)=1:W(2)=1
150 S=54272:POKES+24,15
160 FORN=0TO23:POKES+N,0:NEXT
169 REM*HI BIT SUS/REL LASTS FOR EVER*
170 G(0)=17:G(1)=33:G(2)=65:G(3)=129
189 REM*[CLR]
190 PRINT"□SYNTHESIZER"
```

How it works

10-60 POKE DATA to memory
100-170 store initial values in variables and memory
190-290 PRINT out display
300-500 main routine, test for key press
1000-1090 octave definition
1100-1190 envelope choice per voice
1200-1290 waveform definition
1300-1390 reset chosen sound channel
1400-1550 define an envelope
1900-1950 GET key subroutines
1960-1970 messages
2000-2160 machine code DATA
2200-2300 which key gives which note
2310-2340 Base note DATA (two bytes per note)
9000-9030 remember a note
10000-11010 play back note

Variables

F final note number
NO remembered note number
S sound register start
TT playback speed factor
V voice times 7
E(2) envelope per voice
G(3) waveform numbers for POKEing
O(2) octave per voice
R(400) recall notes
T(400) delay time per note
S1(100),S2(100) defined envelope store
W(2) waveform per voice

Hints on conversion

Unfortunately, as sound parameters vary so much between computers, conversion will need extensive alterations, depending on the complexity of your commands.

The machine code routine GETs one of the octave keys pressed and plays a note, using DATA POKEd in by the BASIC part of the program. This should be replaced by a GET key statement, an array for key to note conversion, and your sound commands.

POKE commands are either used to pass data to the machine code, or (if the variable S is in the statement) to set volume or clear the sound registers. Thus, they can mainly be ignored if you have sound commands, as variables will replace them.

Otherwise, BASIC commands are fairly standard, and the only other main conversion should be to change the limits of figures used.

COMMODORE 64 PROGRAM

```
199 REM*[DWN]
200 PRINT"■VOICE    OCTAVE    ENVELOPE";
210 PRINT"    WAVEFORM"
220 FORV=0TO2
229 REM*[DWN]
230 PRINT"■"V,O(V),E(V),W(V)
240 NEXTV
249 REM*[DWN]
250 PRINT"■KEYS:"
260 PRINT"F1 = OCTAVE","F3 = ENVELOPE"
270 PRINT"F5 = WAVEFORM","F7 = RESET"
280 PRINT"F2 = ENVELOPE","F4 = REMEMBER"
290 PRINT"F6 = END      ","F8 =PLAYBACK"
299 REM*MAIN ROUTINE*
300 SYS12032:GETA$:POKE866,PEEK(865)
310 IFPEEK(780)<>99THEN9000
320 IFA$="↑"THENV=7:GOTO1300
330 IFA$=CHR$(13)THENV=14:GOTO1300
340 IFA$="£"THENV=0:GOTO1300
350 IFA$="■"THEN1000
360 IFA$="■"THEN1100
370 IFA$="■"THEN1200
380 IFA$="■"THEN100
390 IFA$="■"THEN1400
400 IFA$="■"THENK=1:NO=0:GOTO1960
410 IFA$="■"THENK=0:F=NO:GOTO1970
420 IFA$="■"THEN10000
500 GOTO300
999 REM*[CLR]
1000 PRINT"■   OCTAVE DEFINITION"
1010 GOSUB1900
1020 PRINT
1030 INPUT"WHICH OCTAVE";O
1040 IFO<1ORO>7THEN1030
1050 O(V)=O:POKE12800+V,7-O
1090 GOTO190
1099 REM*[CLR]
1100 PRINT"■   ENVELOPE CHOICE"
1110 GOSUB1900
1120 FORN=0TO63
1130 IFS1(N)=0ANDS2(N)=0THEN1150
1140 PRINTN,S1(N),S2(N)
1150 NEXT
1160 INPUT"WHICH ENVELOPE";E
1170 IFE<0ORE>63THEN1160
1180 E(V)=E:POKE13056+V*2,S1(E)
1185 POKE13057+V*2,S2(E)
1190 GOTO190
1199 REM*[CLR]
1200 PRINT"■  WAVEFORM DEFINITION"
1210 GOSUB1900
1220 INPUT"WAVEFORM";W
1230 IFW<0ORW>3THEN1220
1240 W(V)=W:POKE13568+V,G(W)
1290 GOTO190
1300 FORN=0TO6
1310 POKES+V+N,0
1320 NEXTN
1390 GOTO300
1399 REM*[CLR]
1400 PRINT"■  ENVELOPE DEFINITION"
1440 INPUT"ENVELOPE NUMBER";N
1450 IFN<0ORN>63THEN1440
1460 PRINT"INPUT:"
1470 PRINT"ATTACK":GOSUB1930
1475 S1(N)=A*16
1480 PRINT"DECAY":GOSUB1930
1485 S1(N)=S1(N)+A
1490 PRINT"SUSTAIN":GOSUB1930
1495 S2(N)=A*16
1500 PRINT"RELEASE":GOSUB1930
1505 S2(N)=S2(N)+A
1510 FORV=0TO2
1520 X=E(V):POKE13056+V*2,S1(X)
1530 POKE13057+V*2,S2(X)
1540 NEXTV
1550 GOTO190
1900 INPUT"WHICH VOICE";V
1910 IFV<0ORV>2THEN1900
1920 RETURN
1930 INPUTA
1940 IFA<0ORA>15THEN1930
1950 RETURN
1959 REM*[HOME][DWN]
1960 PRINT"■■■REMEMBERING":GOTO300
1969 REM*[HOME][DWN]
1970 PRINT"■■■                ":GOTO300
2000 DATA165,197,141,97,3,201,64,208,1
2005 DATA96,205,98,3,208,1,96,24,10
2010 DATA24,168,185,,48,201,99,208,1,96
2020 DATA133,251,185,1,48,133,252
2030 DATA164,251,185,,49
2040 DATA133,253,185,1,49,133,254
2050 DATA164,252,185,,50,133,2,201,
2060 DATA240,21,170,24,70,253,24,70,254
2070 DATA144,9,24,165,253,24,105,128,24
2080 DATA133,253,202,208,236,165,252
2090 DATA168,185,,52,133,2,185,,53
2100 DATA141,99,3,152,24,10,24,168
2110 DATA185,,51,133,251,185,1,51
2120 DATA133,252,164,2,169,,153,4,212
2130 DATA165,251,153,5,212,165,252
2140 DATA153,6,212,165,254,153,1,212
2150 DATA165,253,153,,212,173,99,3
2160 DATA153,4,212,169,,96,-1
2199 REM* KEY TO NOTE DATA*
2200 DATA99,,99,,99,,99,,99,,99,
2210 DATA99,,99,,4,,2,1,,2,6,
2220 DATA99,,2,2,4,1,99,,8,,6,1
2230 DATA4,2,10,,99,,6,2,8,1,99,
2240 DATA12,,10,1,8,2,14,,99,,10,2
2250 DATA12,1,99,,16,,14,1,12,2,18,
2260 DATA99,,14,2,16,1,99,,20,,18,1
2270 DATA16,2,22,,99,,18,2,20,1,99,
2280 DATA99,,22,1,20,2,99,,99,,22,2
2290 DATA99,,99,,,,99,,99,,2,
2300 DATA99,,99,,,1,99,,-1
2309 REM*NOTE VALUE TABLE*
2310 DATA199,112,124,119,151,126
2320 DATA30,134,24,142,139,150
2330 DATA126,159,250,168,6,179
2340 DATA172,189,243,200,230,212,-1
9000 IFK=0ORPEEK(780)=64THEN300
9010 R(NO)=PEEK(865):T(NO)=TI:TI$="000000"
9014 REM*[HOME][DWN*9]..[LEFT]
9015 PRINT"■■■■■■■■■■■■■■■"NO"■■   "
9020 NO=NO+1
9030 GOTO300
10000 GOTO11000
10002 FORN=0TOF
10005 TI$="000000"
10010 POKE780,R(N):SYS12034:POKE866,64
10020 IFN=0THEN10050
10040 IFT(N)/TT>TITHEN10040
10050 NEXT
10060 GOTO190
11000 INPUT"■TIME REDUCTION";TT
11010 GOTO10002
```

More WINNING GAMES from LYVERSOFT

LUNAR RESCUE (48K SPECTRUM)
A team of research scientists are trapped on the moon and you have to pilot the rescue pod from the mother ship and ferry them back safely. But you have only space for one scientist at a time.
100% M/C action with super smooth HI-RES GRAPHICS AND JOYSTICK OPTION.

LIBERATOR (16K/48K SPECTRUM)
This game tests your aim and reactions as you command a gunsight on a homeward bound space freighter. Your cargo is the royal treasures of the empire and many people want them.
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Based on the popular arcade game Pheonix. This 100% full colour epic pitches you against the evil Albertrons who are set to destroy your race, five levels of fast action bring you to the command centre of battle fleet, can you finish the job. WITH JOYSTICK OPTION.

GOLF (48K SPECTRUM)
Using M/C graphic routines, a game to absorb the keen novice and the scratch player. Play on a 9 or 18 hole course, with full selection of clubs. Along the greens and fairways hours of addictive sport can be had.

PICTURE PUZZLE (DRAGON 32)
With HI RES graphics and 100% M/C. You are set the problem of putting the picture back together. Test your skill against the dragon 32 computer. A game guaranteed to hold you spell bound for hours.

ANDROID INVADERS (DRAGON 32)
In a change of tactics the beings beyond the stars have developed an android of human form to do their dirty work. And with the aid of sensor jamming they may prove formidable. Using full colour, M/C, hi-re graphics this game can offer up to 21 levels of combat.

VOYAGER (VIC 20 8 OR 16K)
The mission is simple, but its completion is far from being so. As captain of starship you have all the best facilities at your disposal. Unfortunately the klingons oppose you. A great M/C version of this classic computer game.

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A riveting, full colour graphic adventure. That pits you against the spells and guardians of the tomb. In your quest to uncover the treasure of the pharoahs. This game will have you enthralled.

BIRD OF PREY (BASIC VIC 20)
Evil baron von fritz is out to kill his cousin, the much loved Prince Rupert. The Baron intends to throw the prince from his plane into the sacred fire pit. But you the eagle of the north will make every endeavour to save your friend Prince Rupert. With colour, sound, this M/C game is a must.

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HCW39

TI-99/4A PROGRAM

There's something evil deep in the cavern...

Our planet is under threat again. You can save us by destroying the alien nerve centre, sunk deep under the surface of the enemy planet. Gary Jowett and David Trillwood wrote Cavern Attacker for the standard TI-99/4A

Cavern Attacker needs skill, concentration, judgement . . . and a little luck.

A sinister race of aliens is attacking your planet and your mission is to destroy the enemy nerve centre sited in the heart of the alien planet.

But the nerve centre can move and tries to trace every move you make. To outpace it you must either hover or accelerate. But beware — this uses a lot of fuel.

With the best fighters engaged in conflict with your planet the nerve centre is guarded by just the cavern and one inexperienced alien.

You have to score a direct hit to destroy the nerve centre. There's a big bonus for hitting the nerve and another for your remaining fuel.

You lose one unit of fuel every time you enter the cavern and two units each time you hover or accelerate.

Each time you leave the cavern you move down a level. Your laser will destroy sections of the cavern and the alien.

When you hit the alien — which can only move up or down — another one appears. This alien can sometimes destroy layers of the cavern and aid your attack.

How it works

20-50 skill levels
60-170 set variables
180-270 define characters, colour
280-570 set up screen
580-690 display, move nerve centre
700-830 display, move bombs
840-990 read keyboard
1000-1040 if keys pressed GOTO
1050-1260 movement of astro-fighter
1270-1500 alien ship, laser
1510-1800 acceleration
1810-1960 astro-fighter's laser
1970-2010 astro-fighter's fuel limit
2020-2370 endings
2380-2420 check to see if alien is hit
2430-2930 instructions

Variables

skill, fuel, score, bonus explain themselves
time number of moves
lza, a, g, c FOR . . . NEXT loops
b, laz, rrr random numbers
ship, dec, hold, z, zb, zs decision variables
xs x co-ordinate of alien
ye y co-ordinate of nerve centre
x,y; xb, yb co-ordinates of astro-fighter; nerve centre
sec length of laser
k read keyboard

```
10 GOSUB 2430
20 PRINT "INPUT SKILL LEVEL(1-6)1-EASY"
30 INPUT SKILL
40 IF SKILL>6 THEN 20
50 IF SKILL<1 THEN 20
60 MSG$="                YOU HAVE CRASHED YOUR SHIP MISSION FAILED    "
70 FUEL=32
80 SCORE=0
90 REM  G.J & D.T
100 REM   SET UP SCREEN
110 RANDOMIZE
120 CALL CLEAR
130 TIME=0
140 XS=11
150 BONUS=1500
160 CALL SCREEN(8)
170 SHIP=0
180 CALL COLOR(2,11,1)
190 CALL CHAR(45,"000000AA55000000")
200 CALL CHAR(120,"FFFFFFFFFFFFFFFF")
210 CALL COLOR(11,14,1)
220 CALL CHAR(115,"FFFFFFFFFFFFFFFF")
230 CALL CHAR(121,"FFFFFFFFFF7E3C18")
240 CALL CHAR(122,"183C7EFFFFFFFFFF")
250 CALL COLOR(12,15,1)
260 CALL COLOR(5,7,1)
270 CALL CHAR(64,"0000E213FF13E200")
280 FOR A=3 TO 31
290 B=INT(RND*8)+12-SKILL
300 FOR C=24 TO B STEP -1
310 CALL HCHAR(C,A,120)
320 NEXT C
330 CALL HCHAR(B,A,122)
340 NEXT A
350 FOR A=3 TO 31
360 B=INT(RND*8)+2
370 FOR C=1 TO B
380 CALL HCHAR(C,A,120)
390 NEXT C
400 CALL HCHAR(B,A,121)
410 NEXT A
420 CALL HCHAR(1,3,70)
430 CALL HCHAR(1,4,85)
440 CALL HCHAR(1,5,69)
450 CALL HCHAR(1,6,76)
460 CALL CHAR(35,"0000187EFF000000")
470 FOR A=7 TO 32
480 CALL HCHAR(1,A,115)
490 NEXT A
500 CALL COLOR(1,9,1)
510 CALL COLOR(9,3,1)
520 CALL CHAR(97,"00C0FEFF00000000")
530 CALL COLOR(10,2,1)
540 CALL CHAR(104,"0000543838381000")
550 YE=1
560 X=11
570 Y=1
580 REM  MAIN PROGRAM
590 REM
600 REM
610 TIME=TIME+1
620 CALL HCHAR(23,YE,32)
630 SCORE=SCORE+1
640 RANDOMIZE
650 BONUS=BONUS-1
660 IF YE<32 THEN 680
670 YE=1
680 YE=YE+1
690 CALL HCHAR(23,YE,35)
700 IF DEC=0 THEN 830
710 CALL HCHAR(XB,YB,32)
720 XB=XB+1
730 IF XB<24 THEN 760
740 DEC=0
750 GOTO 790
760 CALL GCHAR(XB,YB,ZB)
770 IF ZB=32 THEN 820
780 IF ZB=35 THEN 2160
790 CALL HCHAR(XB,YB,32)
800 DEC=0
810 GOTO 830
820 CALL HCHAR(XB,YB,104)
830 CALL HCHAR(X,Y,32)
840 CALL KEY(0,K,S)
850 IF K=81 THEN 1000
860 IF K=76 THEN 880
870 GOTO 890
880 GOSUB 1010
890 IF K=90 THEN 1020
900 IF DEC=1 THEN 950
910 IF K=32 THEN 1040
920 IF K=61 THEN 940
930 GOTO 950
940 GOSUB 1610
950 IF K=80 THEN 970
960 GOTO 900
970 HOLD=1
980 GOTO 1090
990 GOTO 1100
1000 X=X-1
1010 GOTO 1100
1020 X=X+1
1030 GOTO 1100
1040 CALL GCHAR(X,Y,Z)
1050 XB=X
1060 YB=Y
1070 IF Z=35 THEN 2160
1080 DEC=1
1090 IF HOLD=1 THEN 1110
1100 Y=Y+1
1110 CALL GCHAR(X,Y,Z)
1120 IF Z<>32 THEN 1520
1130 IF HOLD<>1 THEN 1150
1140 FUEL=FUEL-1
1150 HOLD=0
1160 IF X>21 THEN 1200
1170 IF X>3 THEN 1210
1180 X=3
```

Hints on conversion

If you are going to try to convert this program to another machine, remember that the Texas has a 24 by 32 screen and it uses user-defined characters. Here are the more unusual commands:

CALL CHAR (ASCII code number, hexadecimal string). Defines characters used in the program. The hexadecimal string describes the pattern to be given to the character with ASCII code stated

CALL HCHAR (row number, column number, ASCII code, number of repetitions). Places character on screen at row and column specified, and repeats it horizontally the number of times stated. If this fourth value is omitted then the character is displayed only once. The character used is the one whose ASCII code appears in the command

CALL VCHAR (row number, ASCII code, number of repetitions). Works the same way as CALL HCHAR only repeats vertically instead of horizontally

CALL GCHAR (row number, column number, numeric variable). Equivalent of PEEK, assigns ASCII code of character at row and column stated to numerical variable

CALL CLEAR clears the screen. Equivalent to CLS

CALL SCREEN (colour code). Specifies screen colour, using colour code

CALL COLOUR (character set number, foreground colour code, background colour code). Specifies foreground and background colours for all characters in set stated

CALL SOUND (duration, frequency, volume). Produces sound and duration, frequency, and volume specified. Duration is in milliseconds, frequency in Hertz and volume in scale from 0 (loudest) to 30 (quietest)

CALL KEY (key unit, k,s). Equivalent to INKEY$ or GET. Returns code if key pressed in variable K.

TI-99/4A PROGRAM

```
1190 GOTO 1210
1200 X=21
1210 IF Y<32 THEN 1260
1220 FUEL=FUEL-1
1230 Y=1
1240 GOTO 1970
1250 X=X+1
1260 CALL HCHAR(X,Y,97)
1270 CALL HCHAR(XS,32,64)
1280 RRR=INT(RND*100)+1
1290 IF RRR<90 THEN 580
1300 LAZ=INT(RND*20+12)
1310 IF LAZ>20 THEN 1400
1320 FOR LZA=31 TO 32-LAZ STEP -1
1330 CALL HCHAR(XS,LZA,45)
1340 CALL GCHAR(XS,LZA-1,ZS)
1350 IF ZS=97 THEN 2100
1360 NEXT LZA
1370 FOR LZA=32 TO 32-LAZ STEP -1
1380 CALL HCHAR(XS,LZA,32)
1390 NEXT LZA
1400 CALL HCHAR(XS,32,32)
1410 IF LAZ>25 THEN 1430
1420 GOTO 1470
1430 XS=XS-1
1440 IF XS>2 THEN 1480
1450 XS=3
1460 GOTO 1500
1470 XS=XS+1
1480 IF XS<23 THEN 1500
1490 XS=22
1500 CALL HCHAR(XS,32,64)
1510 GOTO 580
1520 FOR A=1 TO 14
1530 CALL SOUND(110+A,1000+A,A)
1540 CALL SCREEN(A)
1550 B=A+2
1560 CALL COLOR(12,B,1)
1570 NEXT A
1580 CALL CLEAR
1590 PRINT SEG$(MSG$,12,55)
1600 GOTO 2230
1610 Y=Y+1
1620 FUEL=FUEL-2
1630 IF Y<32 THEN 1710
1640 CALL GCHAR(X,Y,Z)
1650 IF Z<>32 THEN 1520
1660 Y=1
1670 X=X+1
1680 CALL GCHAR(X,Y,Z)
1690 IF Z<>32 THEN 1520
1700 FUEL=FUEL-1
1710 Y=Y+1
1720 IF Y<32 THEN 1800
1730 CALL GCHAR(X,Y,Z)
1740 IF Z<>32 THEN 1520
1750 FUEL=FUEL-1
1760 Y=1
1770 X=X+1
1780 CALL GCHAR(X,Y,Z)
1790 IF Z<>32 THEN 1520
1800 RETURN
1810 CALL HCHAR(X,Y,97)
1820 IF Y>25 THEN 1850
1830 SEC=Y+5
1840 GOTO 1860
1850 SEC=31
1860 FOR LA=Y+1 TO SEC
1870 CALL SOUND(110,110,0)
1880 CALL HCHAR(X,LA,45)
1890 CALL GCHAR(X,LA+1,ZA)
1900 IF ZA=64 THEN 2380
1910 NEXT LA
1920 FOR LA=Y+1 TO SEC
1930 CALL HCHAR(X,LA,32)
1940 NEXT LA
1950 CALL HCHAR(X,Y,32)
1960 RETURN
1970 IF FUEL<=7 THEN 2020
1980 FOR F=32 TO FUEL STEP -1
1990 CALL HCHAR(1,F,32)
2000 NEXT F
2010 GOTO 1250
2020 FOR G=1 TO 14
2030 CALL SCREEN(G)
2040 CALL COLOR(12,G,1)
2050 CALL SOUND(110,110+G,G*2)
2060 NEXT G
2070 PRINT "YOU RAN OUT OF FUEL "
2080 PRINT
2090 GOTO 2230
2100 FOR A=14 TO 1 STEP -1
2110 CALL SOUND(A+10,1000,A)
2120 CALL COLOR(12,A,1)
2130 NEXT A
2140 PRINT "ALIEN DEFENCE DESTROYED YOUR        SHIP"
2150 GOTO 2230
2160 FOR A=1 TO 14
2170 CALL COLOR(12,A,1)
2180 CALL SCREEN(A+2)
2190 CALL SOUND(100+A,3000+A,A)
2200 NEXT A
2210 SCORE=SCORE+BONUS
2220 PRINT "CONGRATULATIONS!YOU DID YOURTASK WELL"
2230 PRINT "SCORE=";SCORE+FUEL*10
2240 PRINT
2250 IF SCORE+FUEL*10<=HS THEN 2270
2260 HS=SCORE+FUEL*10
2270 PRINT "HI-SCORE=";HS
2280 PRINT
2290 RA=TIME/SCORE-(FUEL/10)
2300 PRINT "TIME/SCORE(-FUEL BONUS)      RATIO=";RA
2310 PRINT
2320 PRINT "DO YOU WANT ANOTHER GO?"
2330 INPUT Z$
2340 CALL CLEAR
2350 IF Z$="Y" THEN 20
2360 IF Z$="N" THEN 2370 ELSE 2320
2370 END
2380 SCORE=SCORE+50
2390 CALL HCHAR(XS,32,32)
2400 XS=11
2410 CALL SOUND(5,1000,0)
2420 GOTO 1910
2430 HS=0
2440 CALL CLEAR
2450 PRINT "INPUT YOUR NAME"
2460 INPUT N$
2470 CALL CLEAR
2480 PRINT "     **********************     "
2490 PRINT "*****CAVERN ATTACKER  *****"
2500 PRINT
2510 PRINT
2520 PRINT "     **********************     "
2530 PRINT
2540 PRINT "HERE IS YOUR MISSION          COMMANDER ";N$
2550 PRINT
2560 PRINT "USING YOUR ASTRO FIGHTER ANDYOUR OWN SKILL,YOU MUST     DESTROY YOUR
 ENEMY'S NERVE  CENTRE"
2570 PRINT
2580 PRINT "BUT DOING THIS IS NOT AS     EASY AS IT SOUNDS.THE NERVE CENTRE(A SMA
LL RED SHIP)     "
2590 PRINT "HAS LOCATED ITSELF DEEP INTOTHE HEART OF THE PLANET"
2600 PRINT
2610 PRINT "PRESS SPACE BAR TO CONTINUE"
2620 CALL KEY(0,K,S)
2630 IF K=32 THEN 2650
2640 GOTO 2620
2650 CALL CLEAR
2660 PRINT "YOU DESTROY IT BY BOMBARDINGTHE CAVERN WITH YOUR DEADLY BOMBS AND EL
ECTRIFYING      LASER"
2670 PRINT
2680 PRINT "ONCE YOU HAVE MADE A CLEAR  PATH BETWEEN YOU AND THE    NERVE CENTRE
 YOU HAVE TO    "
2690 PRINT "BOMB IT TO COMPLETE YOUR    MISSION"
2700 PRINT
2710 PRINT "BUT BEWARE.WHILE YOU ARE    BOMBING YOU MAY ENCOUNTER   A STALAGMITE
 OR STALAGTITE"
2720 PRINT "OR A DEFENDING ALIEN WITH   A LONG RANGE LASER.THIS     ALIEN IS A B
IT SIMPLE AND    MAY HELP YOU"
2730 PRINT
2740 PRINT "PRESS SPACE BAR TO CONTINUE"
2750 CALL KEY(0,K,S)
2760 IF K=32 THEN 2780
2770 GOTO 2750
2780 CALL CLEAR
2790 PRINT "****HERE ARE YOUR KEYS****"
2800 PRINT
2810 PRINT "Q-UP"
2820 PRINT "Z-DOWN"
2830 PRINT "SPACE BAR-BOMB"
2840 PRINT "L-LASER"
2850 PRINT "P-HOVER"
2860 PRINT "=-ACCELERATE"
2870 PRINT
2880 PRINT "PRESS SPACE BAR TO CONTINUE"
2890 CALL KEY(0,K,S)
2900 IF K=32 THEN 2920
2910 GOTO 2890
2920 CALL CLEAR
2930 RETURN
```

Catch the secrets and earn a bonus

It was a run-of-the-mill mission — until our undercover agent slipped up. Now it's up to you and your 48K Oric to pick up the pieces. But first let Graham Bailey brief you

You are agent 008 and here is your briefing for your next hazardous mission.

Our agent inside the enemy's secret service complex is going to throw a set of secret documents over the outside wall and you are to wait and collect them.

Unfortunately, our agent is the clumsy type.

As you wait he accidentally sets off the alarm which wakens the sleeping guard. In his haste to get the documents to you, the agent hurls them so they separate and float down on your side.

Meanwhile, the guard has started to climb a ladder and, if he sees you, he will open fire and you lose one of your three lives.

Armed only with the cursor keys on your 48K Oric, you must run up and down catching the papers in your briefcase.

Each document is worth 20 dollars on the black market, so you get bonus money as your score increases.

The rate at which the guard climbs the ladder is determined by the skill level you choose.

A high score system is incorporated — my personal best so far is 2,900 at level 1.

How it works

0-20 set user-defined graphics, screen, instructions, etc
99-199 main loop
200-299 guard shoots routine
300-315 bonus 200
400-415 bonus 400
500-515 bonus 600
600-999 end of game
1000-1090 set variables and screen
1999-8999 instructions
9000-9180 user-defined graphics

Variables

HI high score
LL lives left
X position of spy
SC score
ST skill level
PV$ pavement
LD$ ladder
W1$ wall (graphics)
S1$, S2$ spy (graphics)
G1$, G2$ guard (graphics)
LG position of guard

Hints on conversion

POKE 48035,0 and POKE (#) 26A,10 can be omitted, PRINT AT can replace PLOT, INKEY$ can be used instead of KEY$, PAUSE can replace WAIT. PING and EXPLODE should be replaced by whatever your computer offers.

```
0 POKE48035,0
2 REM ****** TOP SECRET ******
3 REM *** BY G.BAILEY 1983 ***
5 PAPER0:INK3
10 GOSUB 9000:HI=0:LL=3
15 GOSUB 2000' INSTRUCIONS
20 GOSUB 1000'SCREEN
99 REM ****** PLAY *******
100 A=INT(RND(1)*20)
102 PLAY 1,0,0,0
105 FOR D=7TO14:MUSIC1,2,D-2,2
110 K$=KEY$
115 IF K$=CHR$(8)THENX=X-1:IFX<8THENX=7
120 IF K$=CHR$(9)THENX=X+1:IFX>31THENX=32
125 PLOT X,15,CHR$(9)+S1$:PLOTX,16,CHR$(9)+S2$
130 PLOT 10+A,D+1,"/":PLOT10+A,D," "
140 IF SCRN(10+A,D+2)=46THENSC=SC+20:MUSIC1,3,6,5:WAIT1
0:PLAY0,0,0,
0
145 IF SCRN(10+A,D+2)=46THENPLOT20,1,"Scor* $"+STR$(SC)

150 NEXT:PLOT10+A,15," "
155 LG=LG-ST:PLOT 3,LG-1,CHR$(9)+CHR$(6)+G1$:PLOT 3,LG,
CHR$(9)+CHR$
(6)+G2$
160 PLOT3,LG+1,CHR$(3)+CHR$(9)+LD$
165 IF SC>600 AND SC<800 THEN GOSUB300
170 IF SC>1000AND SC<1400THEN GOSUB400
175 IF SC>2000AND SC<2600THEN GOSUB500
180 IF SCRN(5,15)=38 THEN 200
190 GOTO 100
199 END
200 PLOT6,15,48:PLOT7,15,49
210 FOR T=1TO3:SHOOT:WAIT 100:NEXT
220 PLOTX,15,"    ":PLOTX+1,16,"    ":EXPLODE
225 LL=LL-1:WAIT300
230 IF LL=0 THEN GOTO 600
235 GOTO 20
299 END
```

```
300 PLOT15,10,CHR$(8)+"BONUS $200":PLAY0,0,0,0
310 FORT=SCTOSC+200:PLOT27,1,STR$(T):NEXT
315 SC=SC+200:PLOT15,10,"          ":RETURN
400 PLOT15,10,CHR$(8)+"BONUS $400":PLAY0,0,0,0
410 FORT=SCTOSC+400:PLOT27,1,STR$(T):NEXT
415 SC=SC+400:PLOT15,10,"          ":RETURN
500 PLOT15,10,CHR$(8)+"BONUS $600":PLAY0,0,0,0
510 FORT=SCTOSC+600:PLOT27,1,STR$(T):NEXT
515 SC=SC+600:PLOT15,10,"          ":RETURN
600 REM ***** END *****
610 FORT=11TO12:PLOT14,T,CHR$(8)+CHR$(5)+CHR$(10)+"GAME
 OVER":NEXT
620 WAIT 300:PRINTCHR$(12)
630 IF SC>HI THEN PRINT,,,,"NEW HIGH !"
640 IF SC>HI THEN HI=SC:PRINT:PRINT,,,,,SC
645 PRINT:PRINT:PRINT:PRINT,,,"YOU~ SCORE :";SC
650 PRINT:PRINT:PRINT,,,"AGAIN (Y/N) ?"
660 REPEAT:K$=KEY$:UNTILK$="Y"ORK$="N"
670 IF K$="Y"THENSC=0:LL=3:GOTO2100
680 END
999 END
1000 REM ****** SCREEN *******
1005 PRINTCHR$(12):POKE#26A,10:LG=25:X=23
1010 PV$="!     !!!!
```

ORIC PROGRAM

```
1020 PLOT0,17,CHR$(9)+CHR$(2)+PV$:FORT=14TO26:PLOT4,T,C
HR$(9)+LD$:N
EXT
1025 PLOT4,17,3:PLOT7,17,2:FORT=3TO5STEP2:PLOT0,T,CHR$(
9)+CHR$(1)+W
1$:NEXT
1030 FORT=4TO6STEP2:PLOT0,T,CHR$(9)+CHR$(1)+W2$:NEXT
1035 PLOTX,15,CHR$(9)+B1$:PLOTX,16,CHR$(9)+B2$
1038 FORT=15TO16:PLOT1,T,9:NEXT
1040 PLOT 3,LG-1,CHR$(9)+CHR$(6)+B1$:PLOT 3,LG,CHR$(9)+
CHR$(6)+B2$
1045 PLOT10,4,CHR$(8)+CHR$(7)+"SECRET SERVICE":PLOT26,4
,CHR$(9)+CHR
$(1)
1050 PLOT20,1,"Score $"+STR$(SC):PLOT2,1,"Hi-score $"+S
TR$(HI)+CHR$
(3)
1055 IF LL=1 THEN 1065
1058 A=0:FORT=1TOLL-1
1060 A=A+6:PLOT15+A,24,CHR$(9)+B1$:PLOT15+A,25,CHR$(9)+
B2$:NEXT
1065 POKE48035,0
1070 FORT=11TO12:PLOT15,T,CHR$(8)+CHR$(10)+CHR$(5)+"Rea
dy":NEXT
1075 WAIT300:FORT=11TO12:PLOT15,T,"          ":NEXT
1080 FORT=7TO14:PLOT0,T,9:NEXT
1085 PLOT8,0,"
1090 RETURN
1999 REM ****** INSTRUCIONS *******
2000 PRINTCHR$(12):FORT=1TO2:PLOT12,T,CHR$(10)+"TOP SEC
RET":NEXT
2001 PING
2005 PRINT:PRINT:PRINT:PLOT0,4,7:PLOT0,1,6:PLOT0,2,4
2010 M$="Welcome Agent 008."
2015 FORT=1TOLEN(M$):A$=MID$(M$,T,1)
2020 PRINTA$;:WAIT 30:PLAY0,1,1,20:NEXT:PLAY0,0,0,0:PRI
NT
2022 POKE#26A,10:WAIT100
2025 PRINT:PRINT:PRINT" Your mission is to catch the fa
lling"
2030 PRINT:PRINT"documents in your briefcase."
2035~PRINT:PRINT" Each document is worth $20 on the "
```

```
2040 PRINT:PRINT"black market."
2045 PRINT:PRINT" As the amount of documents you have"
2050 PRINT:PRINT"increases,you will be rewarded with "
2055 PRINT:PRINT"bonus money."
2060 PRINT:PRINT:PRINT,"Press <SPACE> for more details"
2065 PLOT1,22,CHR$(12)+CHR$(2)
2070 REPEAT:UNTILKEY$=" ":CLS
2075 PRINT:PRINT:PRINT" Unfortunately setting off the a
larm"
2080 PRINT:PRINT"awakens the guard who sets off up"
2085 PRINT:PRINT"the ladder after you."
2090 PRINT:PRINT" When he sees you he shoots and kills"
:PRINT:PRINT
"you."
2100 PRINT:PRINT:PRINT:INPUT"  Skill level (1-10) ";ST
2105 IF ST>10THENST=10
2108 IF ST<1THENST=1
2110 ST=ST/10
2120 PRINT:PRINT:PRINT,"Press <SPACE> to play "
2130 PLOT1,17,CHR$(12)+CHR$(6):REPEAT:UNTILKEY$=" "
2135 GOTO 20
8999 END
9000 FORT=#B800+(8*33)TOT+135:READD:POKET,D:NEXT
9010 DATA 0,63,63,63,63,63,63,63
9020 DATA 32,32,63,32,32,32,63,32
9030 DATA 1,1,63,1,1,1,63,1
9040 DATA 63,63,63,63,63,63,0,0
9050 DATA 62,62,62,62,62,62,0,0
9060 DATA 3,47,35,49,55,55,63,31
9070 DATA 48,61,49,35,59,59,63,62
9080 DATA 7,7,15,14,14,14,62,62
9090 DATA 56,56,60,28,28,28,31,31
9100 DATA 0,0,28,18,17,63,33,32
9110 DATA 0,0,0,0,0,0,63,63
9120 DATA 32,32,32,32,63,12,12,15
9130 DATA 16,8,8,12,60,0,0,0
9140 DATA 63,51,51,63,30,0,0,0
9150 DATA 63,33,41,33,41,37,33,63
9160 DATA 48,60,48,32,48,48,63,63
9170 DATA 0,0,0,0,0,0,63,60
9180 RETURN
```


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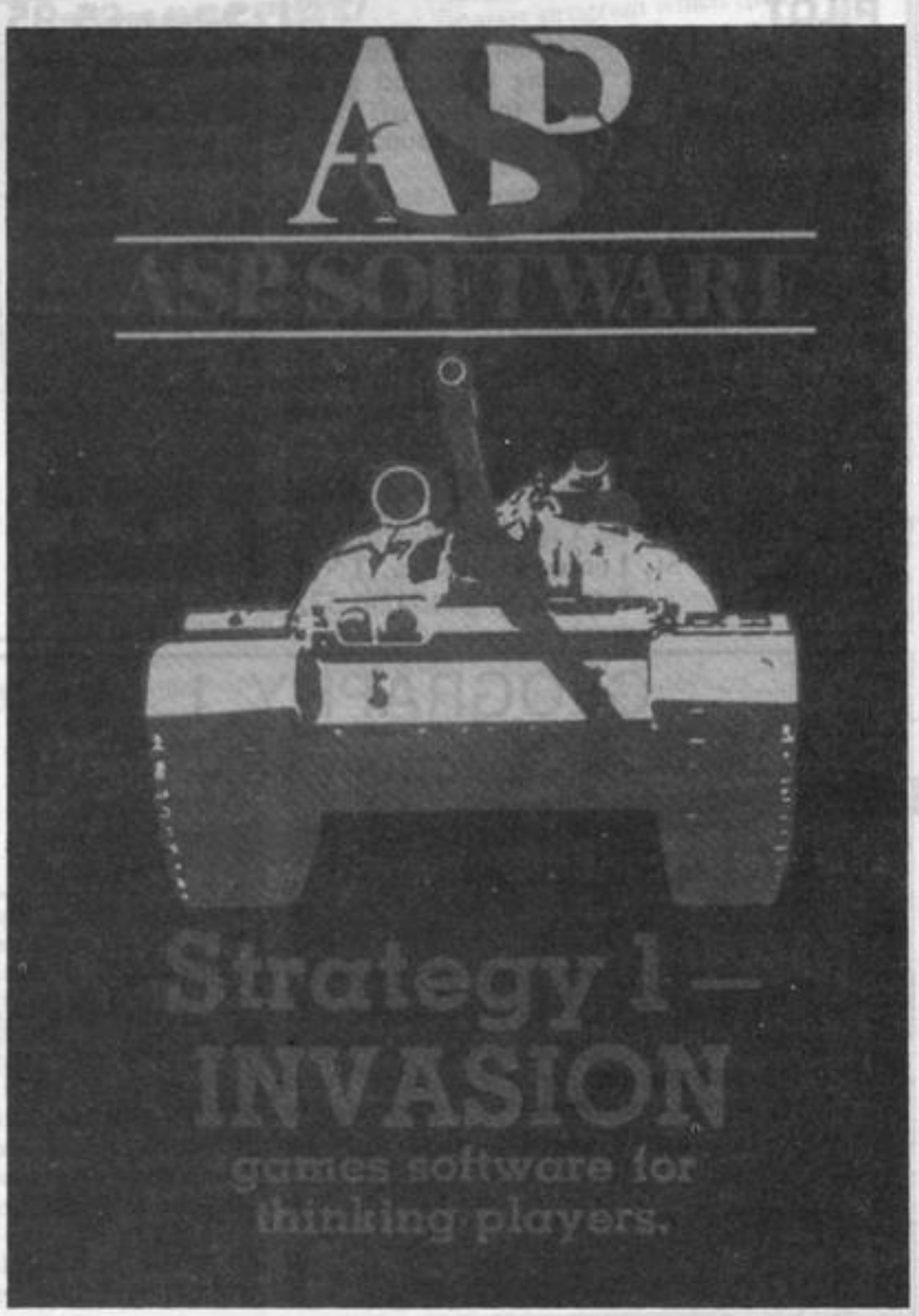

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GEOGRAPHY 1

ZX Spectrum 48K

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48K Spectrum £14.95

Kemp, 43 Muswell Hill, London N10 3PN

The cassette and booklet arrive in a smart, rigid plastic wallet with space for a second cassette. Unfortunately, all that glisters is not gold.

The demonstration program loaded easily, but is followed by the user program. This would make the latter difficult to locate. The reverse side of the cassette, however, is left blank!

Some instructions are given on-screen, others being found in the booklet. To gain access to the program a code is entered. This provides little security as an incorrect input does not make the program crash.

An account can be displayed, page by page, with data, reference, and gross and net amounts shown. The file can be updated and entries can be corrected or deleted.

Whole accounts can be deleted, but alterations to ledger sales and VAT accounts would have to be made manually.

The program will also list debtors, indicating those whose credit limit has been reached, give a sales summary, and can be used for monthly ledger accounting. There is a hard copy option on all displays.

The menu is therefore quite extensive, but so is the size of the program — over 16K! Although up to 253 entries per account and 283 accounts are offered, my machine would only accept four accounts of the maximum number of entries, or 283 accounts of only two entries each. The booklet hints at this — "... maintain more than one file."

All communication with the program is by INPUT statements. This becomes a little tiresome after a while, especially with single character entries.

The program allows the user to run a sales ledger accounting system, but users are advised to consult their accountant to ensure sufficient controls exist.

As both program and data are SAVEd — a pity with the Spectrum's data SAVE facility — the time to save one file and load in the next (including verify) is in excess of 14 minutes!

These last two factors, coupled with the need to define the size of the file at the beginning, makes this package not particularly attractive — especially at £14.95. **C.B.**

instructions	60%
ease of use	45%
display	80%
value for money	30%

★ ★

Let your micro take office

Our reviewers try out programs to turn your micro into an office worker

Home Accounts
32K BBC £9.95

Diamondsoft, Bridge Buildings, 11a Ladybridge Road, Cheadle Hulme

Home Accounts loaded easily, but I had to come back four times and spend 3½ hours before I began to understand it.

A program of this type needs a very comprehensive instruction sheet and, if possible, a demonstration program. Home Accounts has neither.

It was difficult to obtain feedback about the information I was feeding into the program, and this did not give me any confidence that it would be processed correctly.

It would be a long time before I would trust this program, or myself, enough to rely upon it to look after my accounts.

The whole essence of computer utilities is to increase speed and accuracy, but with a four minute loading time and difficulty in checking entries, one would only use this program as an intellectual exercise.

However, it is clever in that it can manipulate any type of entry you could want, including paid and unpaid bills, regular payments, and payment of unpaid bills.

It will also display updated reports on balance, transactions, bills waiting payment, etc. All data can be saved, loaded and updated.

But the instructions and program could do to be much more user friendly. **J.D.**

instructions	20%
ease of use	30%
display	90%
value for money	50%

★ ★ ★

Timescript/ Speedwriter
Dragon 32
£7.95

Dragon Data, Kenfig Industrial Estate, Margam, Port Talbot SA13 2PE

Timescript is a program designed to make it easy to type and print text such as business letters. It has facilities for formatting and editing and is similar to a simple word processor.

However, the program uses a series of predefined or user defined mnemonics to aid entry speed — for example, typing ab produces the word "about" and zc produces "they can". About 636 double letter abbreviations can be used.

The program is supplied with a very detailed, but easily understood booklet. It loaded in two sections, the first being a BASIC master program which then loads the vocabulary data — either the one supplied or one you have defined yourself.

A menu is displayed with options to define or list mnemonics, set printer/tape, print address, input text or print a stored file.

Without a printer this program is useless but, if you are prepared to learn a complete language of two-letter abbreviations and frequently need to print standardised text, this could be a very useful and valuable program. As it is a specialist utility program it will appeal to a limited market, but may be worth looking at. **R.E.**

instructions	90%
ease of use	52%
display	51%
value for money	63%

★ ★ ★

Flexifile
32K BBC £9.95

Diamondsoft, Bridge Buildings, 11a Ladybridge Road, Cheadle Hulme, Cheadle SK8 5LL

The storage and manipulation of vast quantities of data has got to be one of the most vital and useful tasks that a computer can undertake on behalf of us mere mortals. This program is meant to make such things easy and enjoyable and it is certainly very simple to use.

This is ensured by the use of menus from which you select the function you require. If this is illogical — eg, you select print when no file is present — then the program simply returns you to the master menu.

The cassette inlay cards provide the instructions and they are fairly informative for new users. There is precious little in terms of examples, however, and there is no specimen database.

There is no date checking algorithm — you can type in any string of characters and it is accepted as a date (what use the date is to the program I haven't yet worked out!)

You expect a compromise between power of program and spare memory in all databases: in this example there is a second manipulation program which means extra loading time.

The publishers do offer an advice service, upon payment of a £5 fee.

Final point to note is that the BBC doesn't have the memory for vast databases, so expect to have to keep more than one file. **D.C.**

instructions	80%
ease of use	85%
display	80%
value for money	70%

★ ★ ★ ★

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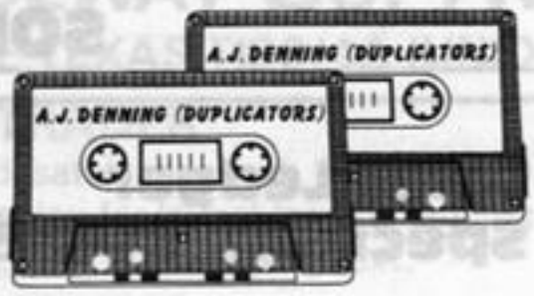

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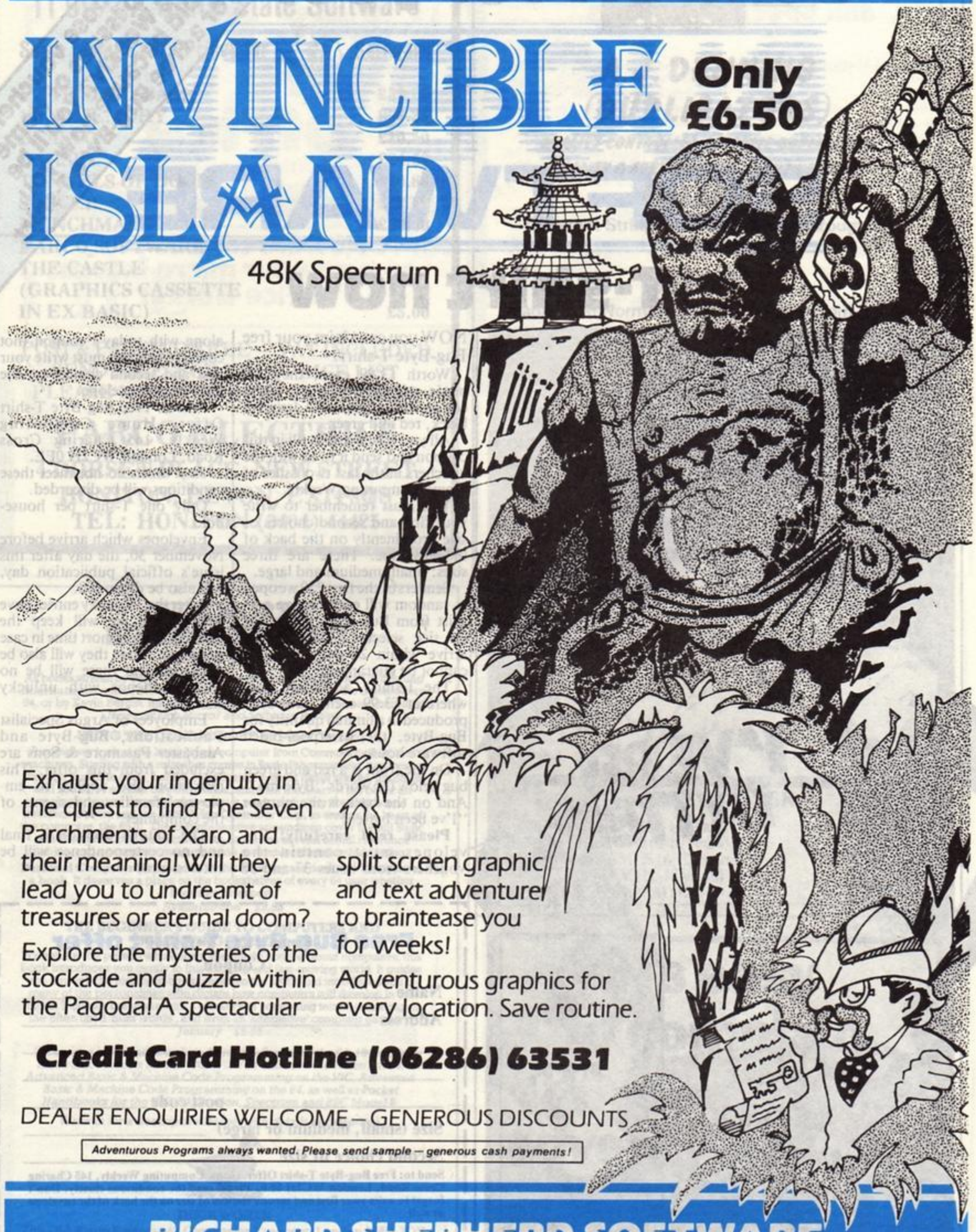

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Spectadraw update

Many thanks for taking the trouble to review Spectadraw 2 in issue 37 of HCW.

There are always problems involved with pre-production copies, and the copy of Spectadraw 2 which we supplied before the beginning of the current football season was no exception.

The bug, correctly identified by your reviewer, was eliminated at the start of the season. Sales of Spectadraw in the UK and 10 other countries (we are still trying to establish what they do with the program in Iceland!) are such that we are convinced the program is bug free.

The other unfortunate spin off from your reviewer examining a pre-season copy of the program was that he had to spend three hours inputting the results of matches played up to date.

We dispatch copies of Spectadraw 2 on Monday and Thursday each week and each copy has the database updated to include the matches played up to and including the night before dispatch.

The program is therefore ready to use upon receipt.

We are sure that you will want to redress the balance by publishing our comments in your letters page!

B. S. McAlley, Spectadraw, Chinnor, Oxford

Double trouble

How my heart goes out to B. E. Smith who, by owning a ZX81, is made to feel like a freak. This is something that has always bugged me and it's good to learn that Home Computing Weekly has sympathy.

I notice that VIC-20 owners are having to go through the same thing now that the 64 is taking over.

I am not afraid to admit, even if it does make me a social outcast, that I own a ZX81 and a VIC (double trouble).

To me, those who look down on the little black box just do not have the imagination to use it to its full potential.

We few will still be computing when the others have bored themselves to death shooting down space ships and fleeing from monsters ... it's enough to make a computer turn in its chips... what a waste.

Well, after a moan and groan, thank you HCW for giving both the 81 and the VIC a good write up.

To close, do you, or any of your readers know of a POKE for the ZX81 that will give repeat keys?

Ian Boulton, Kingswood, Bristol

Beating those joystick problems

I was interested in R. C. Sanderson's CALL JOYST subroutine for the TI-99/4A (HCW 35) as I too had initial problems.

I would advise purchase of the Extended BASIC module, not only for the sprite graphics, but for the ease of joystick and movement programming this module affords.

In the same issue, Paul Hopkins asked if his score on Parsec was a record. Well, I have bad new for him, as I have beaten this score on two separate occasions, the latter being 1,569,800, in a marathon game lasting over five hours. I still have the blister marks.

Parsec is a marvellous game, but I was a little disappointed with the non-appearance of the seventh digit upon reaching the magic million.

I take your magazine every week and have nothing but praise for the way you cater for us 99ers.

P.S. Has anybody out there cracked the coloured button code on Scott Adams Mission Impossible? If you have, please write in with a clue before my TV screen gets a size seven Doc Marten.

Dennis Kemp, Mile Cross, Norwich

Cleverproof solution?

Many thanks to all who have pointed out that my keep-your-secret program (HCW 31) is not foolproof (or rather is not "clever-proof"!) I was aware (honest!) of the CAPS 6 trick but I wondered if there was a solution.

Sure enough, Alan Gee (HCW 37) found one, for which I am very grateful. It is spectacular when you try it out!

Andrew Turek, London NW11

Chess victory

I thought you may be interested in a chess game which several friends and I recently organised. Not as you might expect between two people, or even a person versus a computer, but in fact one computer against another.

The actual opponent was the Sargon II cartridge on the VIC-20 and Psion Chess on the ZX81.

The procedure was as follows. In the first game the ZX81 played white, and the VIC-20 black. Therefore when the ZX81 played a move, the VIC would expect one from an opponent.

The move played by the ZX81 was then typed into the VIC. Then the VIC played its move, which was typed into the ZX81. The game was played in this manner until one computer claimed check mate.

We played two games, each computer taking its turn at playing white. The outcome was the VIC-20 won both games.

We hope in the future to play a game between the VIC-20 and the Spectrum, but the date has not yet been arranged.

Paul Brown, Buckley, Clwyd

Am I the Champion?

Last weekend I finally made it. After hours and hours, nearly an over-heated computer and very sore fingers, I completed the last screen of the super-fast, highly addictive Laser Snaker game by Poppy Soft for the 48K Spectrum.

Am I the only one yet to do this, which means I'll win the £100 prize? I'm a girl, so I challenge all male computer addicts to see if they're good enough to get to the last maze on Laser Snaker (I'm not saying a word about what happens!) and beat my high score of 29,650.

Must be off now — Laser Snaker has just finished loading on my computer. I'm now attempting it on speed 2 and difficulty level 1 — impossible, or is it?

Jackie Thomas, Leicester ■

ORIC PROGRAM

Moving into machine code? Here's help

Whether you're already writing some machine code or just learning, David Nowotnik's disassembler will make life easier. It's for the 6502 processor in the 48K Oric-1

Many programmers of home computers move onto machine code once they have acquired a good understanding of BASIC.

This trend seems to be motivated by speed; machine code programs can be more than a hundred times faster than their BASIC equivalents. But while programs are faster, programming can take very much longer.

In machine code you are supplying the CPU with a succession of simple commands in the form of numbers.

Often quite a few machine code commands are required to do the equivalent of one or two lines of BASIC. And while the list of numbers means a lot to the CPU, they usually mean little to the human operator.

To help machine language programmers, an intermediate language was devised called assembly language. This is a translations of those numbers into a code more readily understood by man.

The process of converting machine code to assembly language is called disassembly, and this article presents a program for carrying out this process on the Oric-1.

If you know little about 6502 machine language programming, then I suggest you read one of the many good text books on the subject. If you already know a little, and want to learn more, disassembling other people's machine code routines can be an excellent way of helping your learn, and my disassembler program should help.

The menu-driven program (see **figures 1 and 2**) has several features.

It presents a disassembled listing of machine code on your TV screen or on the printer. If you are writing machine code, then the program includes a hex loader to enter machine code through the keyboard, edited as required, and finally SAVEd on tape.

When you RUN the program, a title page is presented, followed by a short pause while various arrays are filled. The main menu, shown in **figure 1**, will appear. Two of the three main options will each give secondary menus, as shown in **figure 2**.

The SAVE/LOAD machine code option in the main menu gives further selections.

Unfortunately, the first of these (load machine code from tape) will not work. A ROM error (one of many in the Oric) prevents CLOAD from working within a program. I've retained the option in the menu to present an apologetic message on the screen to serve as a reminder of Oric's failing.

If you wish to load machine code from tape, stop the program (option 4 in the main menu), and use CLOAD as a direct command to load the machine code, followed by RUN.

You can, however, SAVE machine code from within a program, and option 2 allows you to do this. After selection of this option, you will be asked for a file name, and the start and end addresses. Once the block of bytes have been saved, the SAVE/LOAD menu will reappear.

Option 3 of the SAVE/LOAD menu allows you to enter your own machine code routine with a hex loader. First, you have to set the start address for your routine.

If you have a short routine, it can be stored in the safe area starting at address hex 400, otherwise it should go above HIMEM, which was set to hex 8000 by the program.

Enter your machine code as hexadecimal numbers. You should enter 'S' to stop; if you make a mistake, erase the error by pressing the delete key, and continue entering the numbers.

As you enter the numbers they will automatically be arranged on the screen in a hex dump array. Don't worry if you make a mistake and fail to spot it; you can use the edit routine to make any corrections.

Selection 2 from the main menu allows you to disassemble any routine you have placed in RAM, or any in-built routine in ROM. You start by specifying the start address, and whether you wish the output to be directed to the screen or printer.

Your machine code routine is disassembled one screenful at a time. On the screen (or printer) will be given the opcode address, the opcode mnemonic, the mode, the value of any operand, and the byte values of the entire machine code instruction.

While the opcode mnemonics are standard, the symbols for the mode are not. The system for display of modes is shown in **figure 3**. The abbreviations shown are directly attached to the three letter mnemonic of the opcode.

I find this system easier to understand than the standard method, hence my reason for using it in this program.

Once the screen is filled with a disassembled listing, pressing any key will give you the next 'page'. To stop the process, press 'S' at any time.

Editing of machine code in RAM is possible using the third option in the main menu. You may alter the value of a single byte, or move a block of bytes. Some caution has to be used with this option not to accidentally alter the BASIC program, variables, or values in the first three pages of RAM.

If you want a short machine code routine to try out with this program, enter the listing in **figure 4** using the hex loader. Use 400 hex as the start address, and use CALL #400 as a direct command to find out what it does. The first 12 bytes are machine code, the rest is DATA.

1 Save/Load machine code
2 Disassemble machine code
3 Edit machine code
4 Stop

Figure 1 – main menu

SAVE/LOAD MACHINE CODE
1 Load machine code from tape
2 Save machine code on tape
3 Use hex loader
4 Return to main menu

EDIT MACHINE CODE
1 Alter a byte value
2 Move a block of bytes
3 Return to main menu

Figure 2 – secondary menus

Mode	Abbreviation
Implied	none
Accumulator	A
Absolute	none
Zero page	Z
Immediate	IM
Absolute,X	X
Absolute,Y	Y
Zero page,X	ZX
Zero page,Y	ZY
(Indirect,X)	IX
(Indirect),Y	IY
Relative	none

Figure 3 – abbreviations for modes

```
A2 20 BD OB 04 9D 84 BB CA DO F7 60 11 52 65 6D
65 6D 62 65 72 20 74 6F 20 67 65 74 20 48 43 57
20 6E 65 78 74 20 77 65 65 6B 20 10
```

Figure 4 – an example machine code routine to try

```
10 REM   6502 DISASSEMBLER
20 REM        David Nowotnik
30 REM
40 REM
50 REM
60 REM        48K version
70 HIMEM#7FFF:TEXT:PAPER0:INK7:PRINTCHR$
(17)
```

ORIC PROGRAM

```
80 DIMOC$(256),OP(256),SC$(400)
90 E$=" "+CHR$(27)
100 LS$=" ##################################
######"
105 POKE618,2:IFPEEK(524)<128THENPRINTCH
R$(20);
110 HM$=CHR$(30):D$=CHR$(10):U$=CHR$(11)
:LT$=CHR$(8)
130 RT$="":FORI=1TO8:RT$=RT$+CHR$(9):NEX
T:DH$=CHR$(4)
140 GOSUB200:PRINTHM$D$D$D$D$D$RT$RT$DH$
E$"J6502"DH$
150 PRINTD$D$D$RT$"HEX LOADER/DISASSEMBL
ER"
160 PRINTD$D$D$RT$"  FOR THE 48K ORIC 1"
170 PRINTD$D$D$RT$"                1983, D.
 Nowotnik"
190 GOTO800
200 CLS:PRINT:PRINTLS$
210 FORI=1TO20:PRINT" #";SPC(34);"#"
220 NEXTI:PRINTLS$
230 RETURN
250 HA$=HEX$(W):HA$="0000"+HA$:HA$=RIGHT
$(HA$,4)
260 W$=STR$(W):W$="      "+W$:W$=RIGHT$(W
$,7):W$=HA$+W$
270 V$=HEX$(T):IFLEFT$(V$,1)="#"THENV$=R
IGHT$(V$,LEN(V$)-1)
280 V$=RIGHT$("00"+V$,2)
290 K$="  "+K$+"                ":K$=LEFT$(K
$,8):RETURN
300 B=PEEK(W+1):G$=HEX$(B):IFB>16THENV$=
V$+RIGHT$(G$,2):RETURN
305 V$=V$+"0"+RIGHT$(G$,1):RETURN
310 NM$=RIGHT$("          "+STR$(PEEK(
W+1)),10)+"   ":RETURN
320 PRINTD$" For a printer listing press
 'P'"
330 PRINTD$"  else press any other key"
340 GETP$:RETURN
350 PRINTD$D$"Enter file name ";:INPUTNF
$
360 RETURN
370 PRINTD$"Enter start address ";:INPUT
SA
380 PRINTD$"Enter end address ";:INPUTEA
390 RETURN
400 PRINTD$D$" Start tape, press a key,
then wait"
410 GETZ$:WAIT600:RETURN
420 HI=ASC(LEFT$(S$,1))-48:IFLEFT$(S$,1)
>"9"THENHI=HI-7
430 LO=ASC(RIGHT$(S$,1))-48:IFRIGHT$(S$,
1)>"9"THENLO=LO-7
440 HI=HI*16:RETURN
700 TEXT:PAPER0:INK7:CLS
800 REM INITIALISE
810 FORI=1TO256
820 READOC$(I):IFOC$(I)="X"THEN840
830 READOP(I)
840 NEXTI
850 GOSUB200
860 PRINTHM$D$D$D$D$RT$RT$"MENU"
870 PRINTD$D$D$RT$"1.  Save/load machine
 code"
880 PRINTD$D$RT$"2.  Disassemble Machine
 code"
885 PRINTD$D$RT$"3.  Edit machine code"
890 PRINTD$D$RT$"4.  Stop"
895 PRINTD$D$RT$" *** Select 1 to 4 ***"
900 GETZ$:Z=VAL(Z$):IFZ<1ORZ>4THEN900
910 PRINTU$RT$"          ";Z;" Selected
    "
920 WAIT200
940 IFZ=4THENCLS:STOP
960 ONZGOSUB1000,2000,3000
970 GOTO850
1000 REM Load machine code routine
1010 GOSUB200:PRINTHM$D$D$D$RT$"  SAVE /
LOAD MACHINE CODE"
1020 PRINTD$RT$"          Options"
1030 PRINTD$D$D$RT$"1. Load machine code
 from tape"
1032 PRINTD$RT$"2. Save machine code on
tape"
1036 PRINTD$RT$"3. Use the hex loader"
1040 PRINTD$RT$"4. Return to the main me
nu"
1050 PRINTD$D$D$RT$"  *** Select 1 to 4
***"
1060 GETU$:U=VAL(U$):IFU<1ORU>4THEN1060
1070 PRINTU$RT$"          ";U;" selected
    "
1080 WAIT200:IFU=4THENRETURN
1090 CLS:ONUGOSUB1100,1300,1500:GOTO1000
1100 CLS:PRINTD$RT$"Load machine code fr
om tape"
1110 PRINTD$D$D$D$"      Due to ROM fault
, cannot do."
1120 PRINTD$D$"                Sorry!":
WAIT1000:RETURN
1130 CLOADNF$,A,E
1140 RETURN
1300 CLS:PRINTD$RT$"Save machine code on
 tape"
1310 GOSUB350:GOSUB370:GOSUB400
1320 CSAVENF$,A(SA),E(EA)
1330 RETURN
1500 CLS:PRINTD$RT$"Hex loader"
1510 PRINTD$D$"Enter the start address "
;:INPUTSA:S1=SA
1520 PRINTD$D$"Enter machine code as hex
 digit pairs,";
1530 PRINT"and 'S' to stop and return to
 the mainmenu."
1540 PRINT
```

ORIC PROGRAM

```
1550 Z$=RIGHT$("0000"+HEX$(SA),4)
1560 PRINTZ$;"    ";:MN=0
1570 S$="":FORI=1TO2
1580 GETZ$:IFZ$="S"THENWAIT400:RETURN
1585 IFASC(Z$)=127THENGOSUB1700:GOTO1580
1590 IFZ$<"0"ORZ$>"F"THEN1580
1600 IFZ$>"9"ANDZ$<"A"THEN1580
1610 PRINTZ$;:S$=S$+Z$:NEXTI
1620 PRINT"  ";:GOSUB420:POKESA,HI+LO
1630 SA=SA+1:MN=MN+1:IFMN<8THEN1570
1640 GOTO1540
1700 IFI=2THENI=I-1:S$="":PRINTLT$" "LT$
;:RETURN
1710 IFMN=0THEN1725
1720 PRINTLT$LT$LT$LT$"  "LT$LT$;:MN=MN-
1:SA=SA-1:RETURN
1725 IFSA=S1THENRETURN
1730 PRINT:PRINTU$U$LT$LT$"  "LT$LT$;
1740 SA=SA-1:MN=7:RETURN
2000 REM Disassemble routine
2010 CLS:PRINTD$RT$"  6502 DISASSEMBLE R
OUTINE"
2020 PRINTD$:INPUT"  Enter the start add
ress  ";W
2030 IFW<0ORW>65535THENPRINTD$D$"  Addre
ss out of range":WAIT400:GO
TO2000
2040 IFW<>INT(W)THENPRINTD$D$"  Integer
 values only:WAIT400:GOTO020
00
2045 GOSUB320
2050 CLS:L1=0:PRINT" Address  Opcode  Op
erand  Byte value"
2060 PRINT:IFP$="P"THENLPRINT"  Addre
ss        Opcode
  Operand"
2070 T=PEEK(W):K$=OC$(T+1):K=OP(T+1)
2080 GOSUB250
2090 IFK>0THEN2140
2100 PRINTW$;"  Invalid Opcode  ";U$
2110 IFP$="P"THENLPRINTW$;TAB(10);" Inva
lid Operand ;U$
2120 W=W+1:L1=L1+1:IFL1>21THEN2500
2130 GOTO2070
2140 ONKGOTO2150,2200,2300
2150 PRINTW$K$"  "U$
2160 IFP$="P"THENLPRINTW$K$"
"U$
2170 GOTO2120
2200 MK=0:GOSUB300:FORX=16TO240STEP32
2210 IFX<>TTHEN2250
2220 MK=1:JR=PEEK(W+1)+2:IFJR>129THEN224
0
2230 JR$=HEX$(W+JR):JR$=RIGHT$("0000"+JR
$,4):GOTO2280
2240 JR$=HEX$(W-(256-JR)):JR$=RIGHT$("00
00"+JR$,4):GOTO2280
2250 NEXTX:GOSUB310
2260 IFP$="P"THENLPRINTW$K$NM$U$
2270 PRINTW$K$NM$U$:W=W+2:L1=L1+1:IFL1>2
1THEN2500ELSEGOTO2070
2280 NM$="  to "+JR$+"    ":GOTO2260
2300 NM$=RIGHT$("          "+STR$(DEEK(W+1))
,10)+"    "
2310 GOSUB300:W=W+1:GOSUB300:W=W-1
2320 IFP$="P"THENLPRINTW$K$NM$U$
2330 PRINTW$K$NM$U$
2340 W=W+3:L1=L1+1:IFL1>23THEN2500ELSEGO
TO2070
2500 IFKEY$="S"THENWAIT200:RETURN
2510 IFP$="P"THEN2050
2520 GETZ$:IFZ$<>"S"THEN2050
2530 RETURN
3000 GOSUB200:PRINTHM$D$D$D$RT$"    Edi
t Machine Code"
3010 PRINTD$D$D$RT$"1.  Alter a byte va
lue"
3020 PRINTD$RT$"2.  Move a block of byt
es"
3030 PRINTD$RT$"3.  Return to the main
menu."
3040 PRINTD$D$D$D$D$D$RT$"    Select 1,
2,or 3"
3050 GETZ$:Z=VAL(Z$):IFZ<1ORZ>3THEN3050
3060 IFZ=3THENRETURN
3070 IFZ=2THEN3500
3080 CLS:PRINTD$RT$"        Alter a byte
 value"
3090 PRINTD$D$"  Input byte address ";:
INPUTBA
3100 PRINTD$D$"  Present value = ";PEEK(
BA)
3110 PRINTD$D$" Enter new value  ";:INPU
TNV
3120 IFNV<0ORNV>255ORNV<>INT(NV)THEN3110
 3130 POKEBA,NV
3140 PRINTD$D$D$RT$"Any more (Y/N)"
3150 GETZ$:IFZ$="Y"THEN3080
3160 IFZ$="N"THEN3000
3170 GOTO3150
3500 CLS:PRINTD$RT$"Move a block of byte
s"
3510 PRINTD$D$D$"Enter present start add
ress ";:INPUTSA
3520 PRINTD$D$"Enter new start address "
;:INPUTNA
3530 PRINTD$D$"Enter number of bytes ";:
INPUTBY
3540 PRINTD$D$RT$"  Please wait"
3550 IFSA=NATHEN3000
3560 IFSA>NATHEN3700
3570 NA=NA+BY-1
3580 FORI=SA+BY-1TOSASTEP-1
3590 POKENA,PEEK(I):NA=NA-1
3600 NEXTI:GOTO3000
3700 FORI=SATOSA+BY-1
```

ORIC PROGRAM

```
3710 POKENA,PEEK(I):NA=NA+1
3720 NEXTI:GOTO3000
5000 DATABRK,1,ORAIX,2,X,X,X,ORAZ,2
5010 DATAASLZ,2,X,PHP,1,ORAIM,2
5020 DATAASLA,1,X,X,ORA,3,ASL,3,X
5030 DATABPL,2,ORAIY,2,X,X,X,ORAZX,2
5040 DATAASLZX,2,X,CLC,1,ORAY,3,X,X,X
5050 DATAORAX,3,ASLX,3,X,JSR,3,ANDIX,2
5060 DATAX,X,BITZ,2,ANDZ,2,ROLZ,2,X
5070 DATAPLP,1,ANDIM,2,ROLA,1,X,BIT,3
5080 DATAAND,3,ROL,3,X,BMI,2,ANDIY,2
5090 DATAX,X,X,ANDZX,2,ROLZX,2,X,SEC,1
5100 DATAANDY,3,X,X,X,ANDX,3,ROLX,3,X
5110 DATARTI,1,EORIX,2,X,X,X,EORZ,2
5120 DATALSRZ,2,X,PHA,1,EORIM,2,LSRA,1
5130 DATAX,JMP,3,EOR,3,LSR,3,X,BVC,2
5140 DATAEORIY,2,X,X,X,EORZX,2,LSRZX,2
5150 DATAX,CLI,1,EORY,3,X,X,X,EORX,3
5160 DATALSRX,3,X,RTS,1,ADCIX,2,X,X,X
5170 DATAADCZ,2,RORZ,2,X,PLA,1,ADCIM,2
5180 DATARORA,1,X,JMPI,3,ADC,3,ROR,3
5190 DATAX,BVS,2,ADCIY,2,X,X,X,ADCZX,2
5200 DATARORZX,2,X,SEI,1,ADCY,3,X,X,X
5210 DATAADCX,3,RORX,3,X,X,STAIX,2
5220 DATAX,X,STYZ,2,STAZ,2,STXZ,2,X
5230 DATADEY,1,X,TXA,1,X,STY,3,STA,3
5240 DATASTX,3,X,BCC,2,STAIY,2,X,X
5250 DATASTYZX,2,STAZX,2,STXZY,2,X
5260 DATATYA,1,STAY,3,TXS,1,X,X,STAX,3
5270 DATAX,X,LDYIM,2,LDAIX,2,LDXIM,2
5280 DATAX,LDYZ,2,LDAZ,2,LDXZ,2,X
5290 DATATAY,1,LADIM,2,TAX,1,X,LDY,3
5300 DATALDA,3,LDX,3,X,BCS,2,LDAIY,2
5310 DATAX,X,LDYZX,2,LDAZX,2,LDXZY,2
5320 DATAX,CLV,1,LDAY,3,TSX,1,X,LDYX,3
5330 DATALDAX,3,LDXY,3,X,CPYIM,2
5340 DATACMPIX,2,X,X,CPYZ,2,CMPZ,2
5350 DATADECZ,2,X,INY,1,CMPIM,2,DEX,1
5360 DATAX,CPY,3,CMP,3,DEC,3,X,BNE,2
5370 DATACMPIY,2,X,X,X,CMPZX,2,DECZX,2
5380 DATAX,CLD,1,CMPY,3,X,X,X,CMPX,3
5390 DATADECX,3,X,CPXIM,2,SBCIX,2,X,X
5400 DATACPXZ,2,SBCZ,2,INCZ,2,X,INX,1
5410 DATASBCIM,2,NOP,1,X,CPX,3,SBC,3
5420 DATAINC,3,X,BEQ,2,SBCIY,2,X,X,X
5430 DATASBCZX,2,INCZX,2,X,SED,1
5440 DATASBCY,3,X,X,X,SBCX,3,INCX,3,X
```


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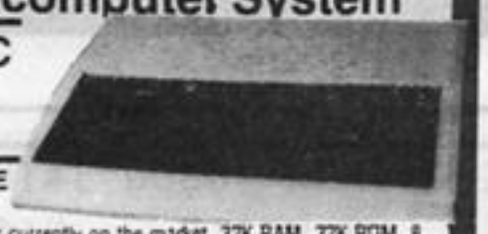

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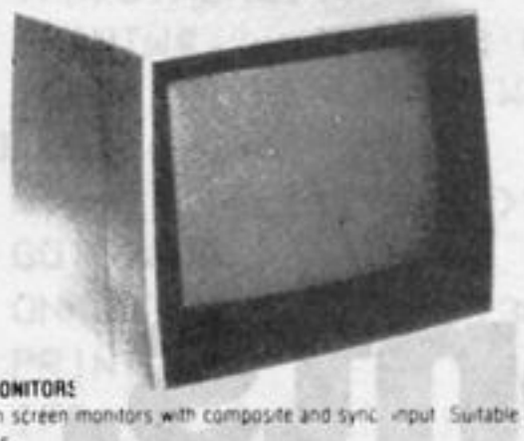

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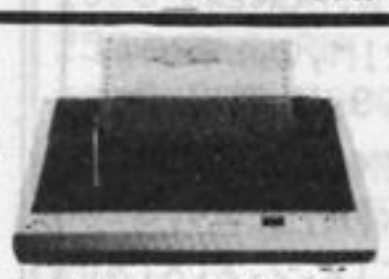

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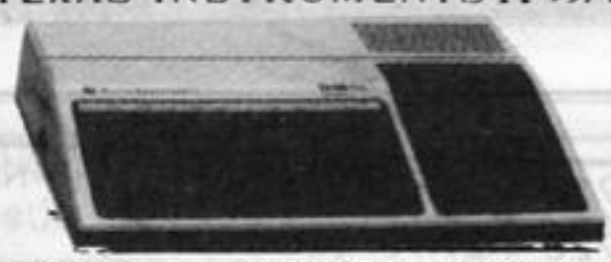

This microcomputer is based on TMS9900 16-bit microprocessor. It includes 16K RAM, 16 colour high resolution graphic (192 x 256). The screen display is 32 characters, 24 lines TI-BASIC. Full-size keyboard. For Software there are about 1000 programs to choose from. There are a lot of peripherals available, e.g. Disk Drives, Disk Interface, Speech Synthesizer, Extra RAM. Additional Language (PASCAL, TI-LOGO, ASSEMBLER).

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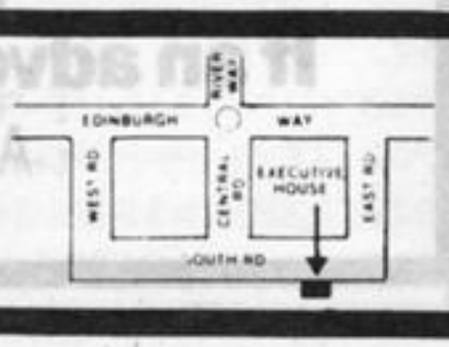

Get your finger on the button...

...for a high-speed action game. Our reviewers pick the winners and the losers

Bewitched VIC-20 £5.50

Imagine Software, Imagine House, 5 Sir Thomas Street, Liverpool

Enter Imagine's latest offering for the VIC-20. New in name, but old in concept. In fact, it doesn't need much imagination to see its resemblance to a cerain P** Man game.

In essence you are dumped in a huge maze, which makes full use of the VIC's expanded screen capabilities.

Movement from one area of the maze to the next is prevented by coloured doors.

In order to open any given door, you must pass you key shaped man through the key shape of the colour corresponding to the door.

Confusing, isn't it? It's even worse on a black and white TV.

In order to stop you a horde of ghosts (sounds familiar) rush around trying to slice you up. Naturally, they get nastier as you progress.

Graphically, the game is average. Apart from the use of the expanded screen, the programmer doesn't use the VIC's capabilities to any real extent. You have a music option, but if you take my advice you won't use it (you can't switch off during the game).

If you like repetitive games with fast action, you'll like this. I found it fun initially, but soon became bored. **A.W.**

instructions	80%
playability	65%
graphics	50%
value for money	60%

★ ★ ★

Hexpert Commodore 64 £7.95

Anirog Software, 8 High Street, Horley, Surrey

What I always wanted, a game involving a small, charming furry alien called Bert!

This unfortunate country cousin has been kidnapped by a wicked witch and dumped on a pyramid of hexagonal pillars.

His task is to skip from pillar to pillar painting them as he goes.

A pair of bouncing balls and a rather annoying snake move about trying to slice Bert up . . . all very nasty.

There are a pair of rotating disks which can be used to excape the opposition.

The bouncing balls appear to have little aggressive intelligence, and are renewed as they leave the bottom of the screen. The snake, on the other hand, wastes no time in tracking Bert down.

The game uses nice graphics with the ubiquitous sprites.

I had only one moan. The colours used were not ideal if you have a black and white set: pale blue and yellow are almost identical shades of grey.

For some reason, the title page takes a ridiculous time to finish its display and became rather tedious. Overall, a rather nice game, and worth a look. **A.W.**

instructions	75%
playability	75%
graphics	95%
value for money	85%

★ ★ ★ ★ ★

Hunchback 32K BBC £7.95

Superior Software, 69 Leeds Road, Bramhope, Leeds

This program fully lives up to the high standard of graphics set by previous offerings from Superior Software.

The aim of the game is to guide the Hunchback, who doesn't look all that hunchy, to rescue the lovely Esmeralda.

Naturally there are numerous obstacles and diversions to overcome, including gaps along the wall, the pendulum, flying rocks, arrows and mean-looking, spear-carrying guards.

The game has plenty of variety, with 13 screens to complete, each successive one being of increasing difficulty, and three skill levels.

The action can be controlled from either the keyboard or with a joystick, the choice of keys being sensible and comfortable to use.

The program loads in two parts, part one being the Superior Software logo followed by the main program.

The instructions are scant, just half a screen displayed by the program. I think these could be extended to explain just how the game plays in a little more detail.

The game is fun to play. I found grappling with the pendulum on the second screen more difficult than some of the later obstacles.

On-screen scoring and a high score are other features, though sadly there is no pause facility. **D.H.**

instructions	60%
playability	80%
graphics	95%
value for money	85%

★ ★ ★ ★ ★

Crawler Spectrum £4.95

CRL, 140 Whitechapel Road, London E1 1ED

The game is a souped up machine-code version of the old favourite of magazine listings: Snake. In this version, you play a crawly thing whose sole purpose in life is to eat bugs.

You crawl around the screen preying on the innocent insects, at the same time being careful not to crash into yourself or the edge of the screen.

Toadstools are dotted around the screen and trying to eat these is not recommended.

Each time your carnivorous crawler intercepts an insect his body grows longer — making it progressively more difficult for the player to safely manoeuvre around the screen.

The graphics are fair and as smooth as a 'square-to-square' game can be. The bothersome bug is quite well programmed too — he seems to jump out of your jaws at just the wrong moment.

The game has nine skill levels. Level one is acceptable but level nine is blindingly fast. In fact, after level five the game becomes unplayable.

The speed of level five can be achieved by careful programming in BASIC and hence the machine-code in this game is largely redundant.

I cannot recommend that you spend lots of hard-earned money on this game. Why not copy it out of a magazine instead? **T.B.**

instructions	60%
playability	65%
graphics	50%
value for money	35%

★ ★

Halls of the Things 48K Spectrum £7.50

Crystal Computing, 2 Ashton Way, East Herrington, Sunderland SR3 3RX

The inlay card states ". . . the finest quality arcade style action yet seen on the ZX Spectrum", but the screen tells a different story.

Whoever wrote the blurb on the inlay card obviously hasn't seen many of the arcade style games that are on the market for the Spectrum these days.

Although the figure on the screen does move smoothly under your control, it moves a little too fast at times for comfort — a simple delay loop in the program would work wonders.

Set inside an eight storey tower block, there are many rooms and passages to search for the screen rings that you need to complete your task.

I never did find any rings, but there are plenty of bottles and what look like those triangles of red balls used in a snooker game.

You have a bow and arrows, and some magic at your disposal. I'm not sure what a vorpal sword is, or that it should even be allowed, but nevertheless, you have one.

This game is also described as ". . . a new dimension in computing games . . . the animated adventure". That's as maybe, but there is nothing in this game that makes for compulsive playing. **B.B.**

instructions	90%
playability	50%
graphics	75%
value for money	50%

★ ★ ★

PROFILE

Why Microdeal followed the Dragon trail

What makes a company decide to specialise in one machine? John Synes told Candice Goodwin why Microdeal didn't go with the crowd

For Dragon owners at least, Microdeal is now a household name. Its range of over 40 programs for the Dragon has dominated the software charts, and one program in particular — appropriately named The King — has reigned almost unchallenged at Number 1 for some months.

Now Microdeal has finally decided to make the move into BBC software, and will follow that up with programs for the VIC-20, Commodore 64 and Atari. But it is one of the very few software companies to have resisted the temptation to write software for the Spectrum.

What has Microdeal got against the Spectrum? The answer John Synes, Microdeal's MD, gives to that question is "Mad dogs and Englishmen go into the Spectrum market!

"There must be at least 50 sizeable companies now doing Spectrum software, but hardly any of them are doing anything for the Dragon. That leaves the field pretty clear for us — so why should we join the crowd supplying the Spectrum too?"

John Synes got into Dragon software through a family connection — the connection between the Tandy Color computer and the Dragon. But his first commercial contact with the computer world was as distributor of CLOAD, an American cassette-based magazine specialising in the Tandy Model 1 micro.

From selling CLOAD he diversified into imported Tandy Colour computer software, for which he needed a programmer to carry out modifications for the UK market. When the Dragon came along, the similarity between it and the Tandy Colour meant that the programmer could quickly convert Tandy software for the new machine.

John started to sell Dragon software in August 1982, and at first the response wasn't exactly overwhelming. He recalls: "I went to the Personal Computer World show in September with five titles for the Dragon — and sold eight of each."

Things were a little easier at the Northern Computer Fair, when more Dragons had been sold, and in December last year John decided to invest in full colour advertising.

Now Microdeal software is on sale in 350 dealers, including Boots, Menzies and Dixons. As well as the software division, there's an advertising division, a distribution division which handles Imagine and Virgin as well as Microdeal itself, and a tape duplicating division, equipped with £40,000 worth of copying equipment.

All this has taken off since June, when John left his job as a manager at Tesco to go into the software business full time.

John has a team of 21 full-time staff, including four programmers, who are currently working on converting programs for other machines.

Though John is aware that software standards are rising all the time, he isn't worried about keeping up. "It's not getting more difficult for us — in fact, it's getting easier because, having made a name for ourselves, we get the cream of the programs submitted to us."

But as well as submitted material, about 60% of Microdeal's current range started life in the USA, in the form of Tandy Colour programs. Again, John feels this gives Microdeal an edge over the competition because "the American software's of a very high standard.

"After all, the Tandy Colour's been around there for three years — people have had plenty of time to get to know the machine. Whereas in the UK, because the 6809 processor the Dragon uses is complicated, people look at it and get frightened off."

One of the penalties of Microdeal's reputation for good software is that its programs are widely copied. "Piracy is an enormous problem for us", said John. "For every program we sell, I reckon there are five or six copies."

To combat the problem, Microdeal is developing a dongle — a hardware device that is sold with the program, and without which the program cannot be run. "It would be worth it for the more expensive games", John reckons. "We could absorb the extra cost of £1 or so, because I know we'd sell more programs."

Piracy problems aside, Microdeal's future looks bright as it prepares to launch another batch of eight Dragon programs to follow up its five recent releases.

"I think the market will hold up for the bigger companies", John said, "But you have to be prepared to spend money to establish your name in people's minds." With a £10,000 advertising budget for its Frogger program alone, Microdeal is making sure that it isn't going to be forgotten.

Some of the Microdeal team: from left to right, top row, Andrew Best, distribution; John Hancock, general assistant; Steven Hipgrave, distribution; bottom row, Paul Johnstone, distribution; Tracey Mayo, receptionist; Lynn Crane, mail-order manageress; Jenny Pope, John Synes' PA; Jayne Downing, accounts

■

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by Primer Educational Software

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Robot Tables challenges the young player to make a series of perfect robots.

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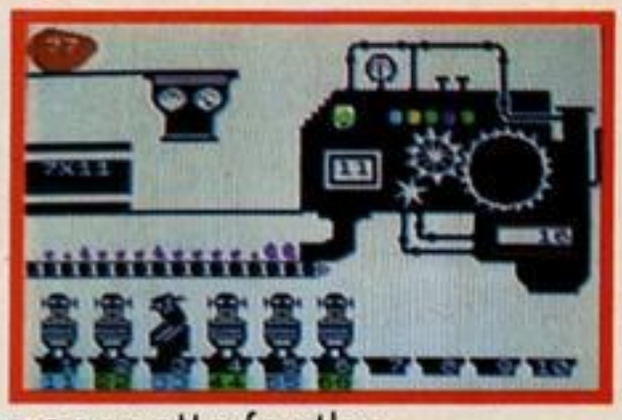

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by Andromeda Software

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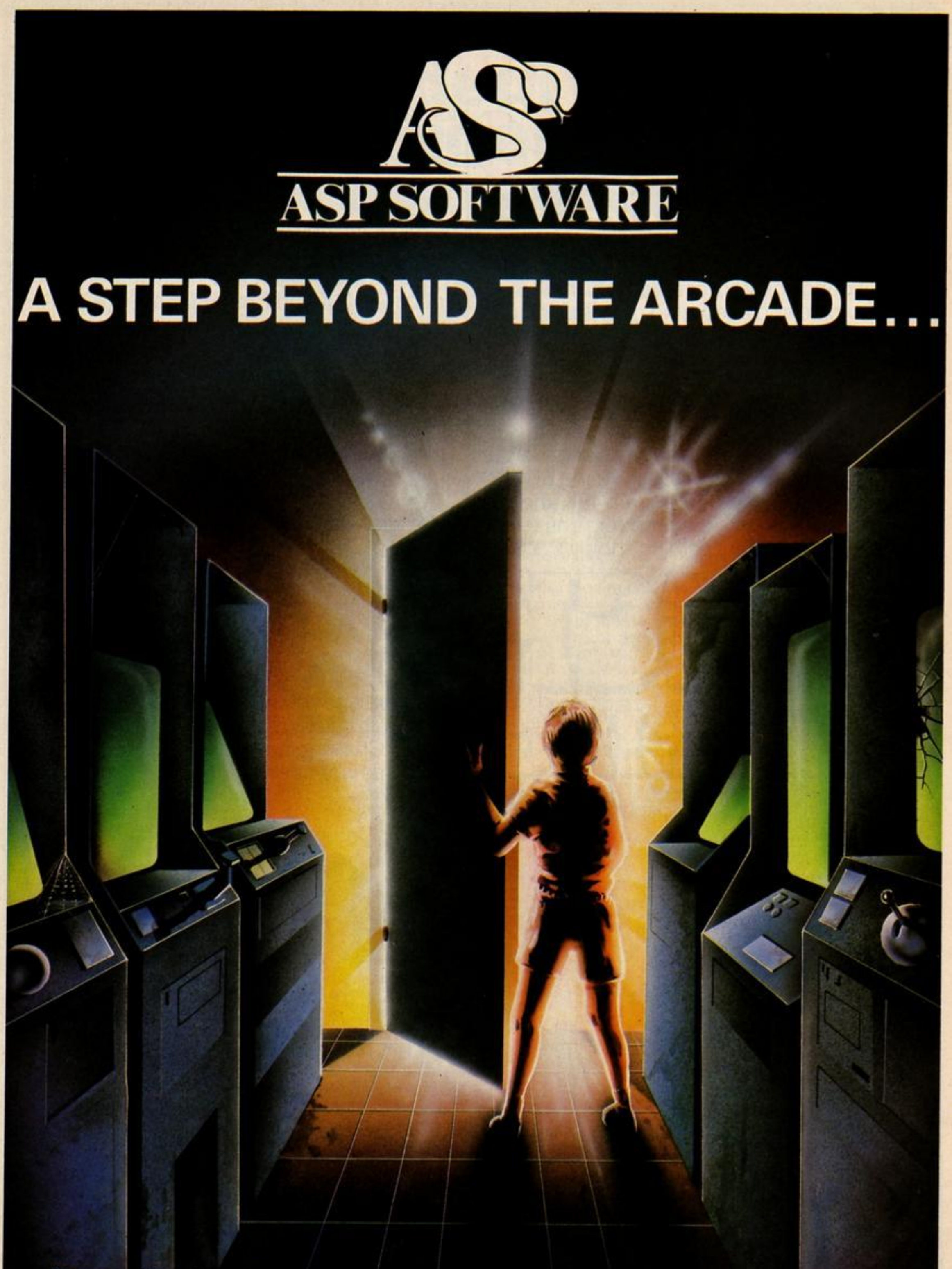

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ONE HUSBAND'S VIEW

My wife will never be the same

Heaven help any frog that crosses the road in front of me, and if I get my hands on Pac-man I'll do something with his fruit no programmer ever thought of.

It's my fault, which makes it worse. I knew it was addictive even before I bought the wretched thing. I kept careful control on my own habit but I forgot to warn her. There didn't seem to be any need. She'd never been interested in mechanical things. Perhaps it was the careful side of her nature that led her astray, seeing my expensive toy standing idle for so many hours in the day.

Whatever it was, there's no going back now. She may recover, she may not, but either way she'll never be the same woman again, the change is too fundamental.

How do you describe an obsession? I suppose it was best summed up by our youngest in the tragic phrase: "That's the fourth time we've had fish fingers this week, Mum". She didn't believe us, of course. They never do. Lost in a cloud of inputs, enveloped in GOTOs, isolated from reality in a never ending loop, the outside world ceases to be relevant.

Culinary monotony aside, the children are protected from the worst of it. The machine is installed in our bedroom and they never see her the way I do. She sits into the night alternately hissing at the loss of a gun emplacement or gloating over the annihilation of another alien fleet.

Her knuckles turn white and she has developed a variation of Rubic's Thumb we call Pac-finger. As she crouches over the keyboard I plead with her to give it up until too tired to argue any more (or paralytic with laughter) I fall asleep, exhausted.

The cruellist part is that she is a superb games player. I'm not macho, I don't need to compete. But her taunts at my feeble performance are so destructive. It is creating role confusion in me and it is going to lead to severe behaviour problems in our two sons. No one else knows, but they have to live with the fact that their mum can beat them at everything from Meteors to 3-Dimensional Noughts and Crosses.

I bought it as a word processor to do my writing but I can't get on it and my typist is now too busy flying our bedroom based 747. For the first time ever I'm looking forward to Wimbledon fortnight.

It's not all bad though, the home computer must be one of the most powerful anti-depression therapies known to man, and the family that plays together has at least got something to talk about over the breakfast table.

Michael Goldsmith
Braunton, Devon

● This space is for you to sound off about the micro scene, to present bouquets, to hurl brickbats, or just to share your opinions or experiences. Send your contribution to Paul Liptrot, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE. Please include your occupation and your interest in computing.

■

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Just as Henry is getting in to his evening at the tables his wife – Mad Martha – has noticed his absence. Realising Henry has absconded with the housekeeping she sets out after him with an axe.

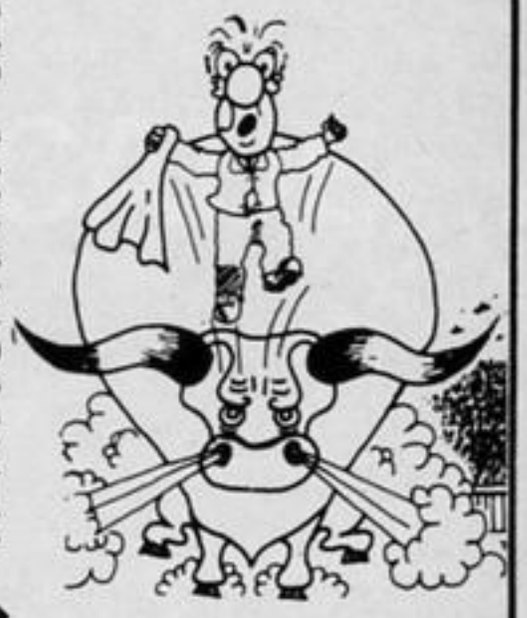
Guess what part you play in this happy tale? That's right, you're Henry. Watch out for that axe!

And now –

Mad Martha II

Time for the annual holiday and Martha decides to visit her half-cousin Manuel, who is a waiter in a plush hotel in Barcelona.

One afternoon, Martha sets out on a bus tour with her son, young Arbuthnot, leaving orders for Manuel to keep an eye on Henry. Unbeknown to Martha, crafty Henry has a Spanish pen-pal, and has planned a secret rendezvous. Henry leaves the hotel, brimming with enthusiasm and Manuel (who is totally wacky!) is hot on his trail. The adventure takes us through the thrills and spills of a madcap chase, taking in amongst other delights, a bull fight in which poor Henry is forced to play the leading role. Guaranteed laughs and fun for all the family!



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Transport of delight

After travelling by land and air in this selection of games, our reviewers arrived at a decision...

Cross Country Car Rally TI-99/4A (Extended BASIC) £13

By Norton Software, from Stainless Software, 10 Asltone Road, Stockport

This game is absorbing for all the wrong reasons. It has a number of poorly-trapped errors which result in bizarre situations which would have made Einstein sit up and take notice.

The aim, well documented, is to drive safely across the USA from California to New Jersey.

Sprites are used to good effect to give an almost vertiginous sense of relative movement.

You must avoid crashing into other motorists, blowing up your engine, missing detours, and the police — well, we all know what American roads are like — and you start with a lump sum of $50,000 which is eaten away by the cost of motoring, States-style.

Unless, of course, you decelerate too hard, in which case you end up travelling backwards, but not just that — you are actually travelling at a negative speed.

I found myself absorbed in the task not of playing the game, but of trying to avoid playing it — the bugs make an otherwise boring exercise unusually enjoyable. No doubt Einstein would have invoked a Special Special Theory to explain it. **P.B.**

instructions	90%
playability	90%
graphics	95%
value for money	40%

★ ★ ★ ★

Hang Glider Pilot TI-99/4A £13

Stainless Software, 10 Alstone Road, Stockport, Cheshire SK4 5AH

The object of this game is to jump from a ridge, and before landing, fly for as long and as far as possible without crashing.

The view you have of the hang glider is from above, but you also have an excellent artificial horizon as well as meters to tell your altitude, your speed ROC (rate of climb/descent), and velocity.

There are only six keys used to control the hang glider — the four arrow keys, as well as A and F. The latter two are used for very steep banks/turns.

Anyone who has played on a flight simulator will know that the arrow facing away from you (in this case, key E) is used to pitch the nose of the aeroplane down, and the arrow facing towards you (in this case, key X) pitches the nose up.

No so in this case. Key E is used to pitch the nose up, and key X is used to pitch it down. Very confusing!

Landing is rather a complicated business but, as the instructions say, "technique comes with practice"!

Even though this program is very pricey at £13, I enjoyed playing it tremendously. **J.J.**

instructions	88%
playability	91%
graphics	100%
value for money	90%

★ ★ ★ ★ ★

Moon Buggy Commodore 64 plus joystick £7.95

Anirog Software, 8 High Street, Horley, Surrey

Well, yet again another arcade machine clone, albeit a good one.

You control a small, six-wheeled moon buggy moving left to right. The background scrolls to the left to give the impression of movement.

In order to give the effect of depth, the speed of scrolling of the background decreases according to the distance of the background from you.

Your progress is impeded by sundry objects. You have to clear craters by jumping over them, boulders can be jumped or shot.

The odd land mine must be jumped and tanks must be shot before they shoot you.

The arch enemy is an alien helicopter which attempts to bomb you. These are to be shot. Your score is a function of your survival time and the number of opponents destroyed.

Graphically the game is very good with nice use of sprites and good animation.

Unfortunately, the programmer seems to believe that all 64 owners should also possess a joystick. It wouldn't be much bother to offer keyboard control as well.

But overall, a well-written game which should keep you occupied for the odd hour. **A.W.**

instructions	75%
playability	85%
graphics	90%
value for money	85%

★ ★ ★ ★ ★

Maurice Minor Dragon 32 £6.95

J. Morrison Micros, 2 Glensdale Street, Leeds LS9 9JJ

A racing car game for the Dragon. Your vehicle is disguised as an old Morris Minor. You have carelessly wandered into the middle of a Grand Prix race and now have to battle it out to the finish.

Steering to left or right is achieved with the right-and joystick, and the fire button acts as the accelerator.

Standard Formula One cars are overtaking you, and if you use the throttle you can catch up and overtake them. Regularly-placed oil slicks ensure that you have very little chance of making the finishing line.

The game is endowed with six levels of play, from Sunday Driver upwards. But I found little difference between any of the levels — all were too difficult for me.

Graphics are reasonable, the sound of the engine is realistic enough and the game can be very fast and smooth.

But it does not grab the imagination and if you are looking for the Dragon equivalent of the famous Atari arcade game Pole Position, forget it.

On the other hand, considering the quality and the price of a lot of Dragon software available now, it may not be such a bad buy. **D.W.J.**

instructions	90%
playability	65%
graphics	75%
value for money	72%

★ ★ ★ ★

Danger Truck/ Bumper Thumper 16K ZX81 £4.50

Work Force, 140 Wilsden Avenue, Luton, Beds

There are two separate games on this tape, which represents good value at the price.

In Danger Track, on side one, you have to drive a car through a moving maze, trying to capture a number of flags while avoiding oil spots and trying to escape from five attacker cars

You can use smoke bombs to confuse the attackers, but as the game runs very quickly this is not much help!

The number of flags and oil spots can be varied. The graphics are bold and the movement fast, if jerky. Loading was faultless and the game was difficult enough to keep your attention.

On the other side of the tape is Bumper Thumper, which is an interesting variation on Pacman.

You inhabit a maze made of grey blocks which can be moved around. The object of the game is to push three special blocks completely out of the maze while avoiding the 'ghost' who is chasing you.

This is not as easy as it sounds; it is possible to push the blocks into such a position that they are jammed and won't move!

In both these games you have three lives and there is a Hall of Fame at the end.

If you enjoy games that involve dodging around mazes, this is a good buy. **C.C-R.**

instructions	75%
playability	70%
graphics	75%
value for money	80%

★ ★ ★

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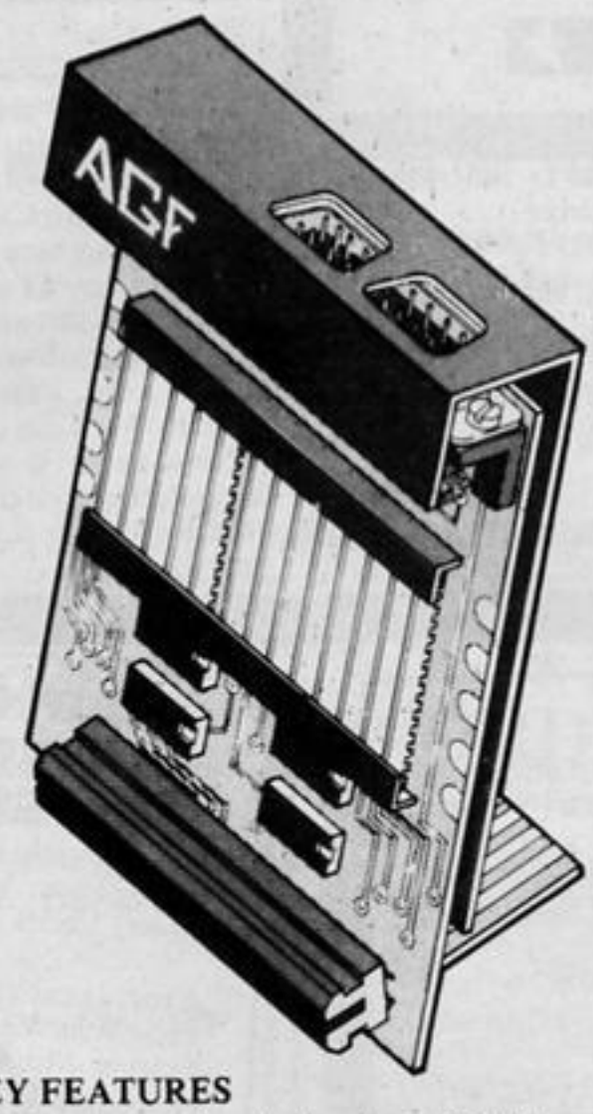

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Top Ten programs for the Spectrum

1	Lunar Jetman	Ultimate (3)
2	Jungle Trouble	Durell (–)
3	Bugaboo	Quicksilva (5)
4	Scrabble	Sinclair (–)
5	Zip-Zap	Imagine (–)
6	Zzoom	Imagine (8)
7	The Hobbit	Sinclair (–)
8	Countabout	Longmans (–)
9	Manic Miner	Bug Byte (10)
10	Ant Attack	Quicksilva (1)

Compiled by W. H. Smith. Figures in brackets are last week's positions

Top Ten programs for the Commodore 64

1	Attack of the Mutant Camels	Llamasoft (–)
2	Purple Turtles	Quicksilva (5)
3	Quintic Warrior	Quicksilva (7)
4	Tank Attack	Supersoft (–)
5	Ring of Power	Quicksilva (8)
6	Cosmic Split	PSS (9)
7	Aquaplane	Quicksilva (–)
8	Motormania	Supersoft (–)
9	Frogger	Interceptor (2)
10	Spriteman	Interceptor (4)

Compiled by Boots. Figures in brackets are last week's positions

Top Ten programs for the VIC-20

1	Wizard and the Princess	Melbourne House (–)
2	Wacky Waiters	Imagine (3)
3	Panic	Bug Byte (4)
4	Catcha Snatcha	Imagine (5)
5	Matrix	Llamasoft (7)
6	Arcadia	Imagine (1)
7	Amok	Audiogenic (–)
8	Bewitched	Imagine (–)
9	Skyhawk	Quicksilva (2)
10	Frantic	Imagine (8)

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Top Ten programs for the Dragon 32

1	Frogger	Microdeal (1)
2	Mined Out	Quicksilva (3)
3	Cuthbert in the Jungle	Microdeal (–)
4	The King	Microdeal (10)
5	Ring of Darkness	Wintersoft (–)
6	Champions	Peaksoft (6)
7	Pettigrew's Diary	Shards (–)
8	Drone Databank	Cablesoft (4)
9	Dragonfly II	Hewson (–)
10	Empire	Shards (7)

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BEST SELLERS

Top 30

1	Valhalla	Legend	Spectrum (26)
2	Jetpac	Ultimate	Spectrum (1)
3	Manic Miner	Bug Byte	Spectrum (2)
4	The Hobbit	Melbourne House	Spectrum (20)
5	Kong	Ocean	Spectrum (6)
6	Zzoom	Imagine	Spectrum (4)
7	Lunar Jetman	Ultimate	Spectrum (27)
8	Trans-Am	Ultimate	Spectrum (3)
9	Cookie	Ultimate	Spectrum (7)
10	Killer Gorilla	Program Power	BBC (8)
11	747 Flight Simulator	Doctorsoft	BBC (–)
12	Arcadia	Imagine	VIC-20 (–)
13	Horace and the Spiders	Psion	Spectrum (5)
14	Hall of the Things	Crystal	Spectrum (10)
15	Cuthbert in the Jungle	Microdeal	Dragon (13)
16	Pool	CDS	Spectrum (23)
17	Chuckie Egg	A&F	Spectrum (17)
18	The King	Microdeal	Dragon (24)
19	Bewitched	Imagine	VIC-20 (29)
20	Pssst	Ultimate	Spectrum (15)
21	Frogger	Microdeal	Dragon (21)
22	Penetrator	Melbourne House	Spectrum (22)
23	3D Combat Zone	Artic	Spectrum (16)
24	Harrier Attack	Durell	Spectrum (–)
25	Falcon Patrol	Virgin	CBM 64 (–)
26	Dungeon Master	Crystal	Spectrum (28)
27	Cuthbert Goes Walkabout	Microdeal	Dragon (12)
28	Johnny Reb	Lothlorien	Spectrum (18)
29	Horace Goes Skiing	Psion	Spectrum (19)
30	Aquaplane	Quicksilva	Spectrum (–)

Compiled by PCS Distribution (0254 691211) and sanctioned by the Computer Trade Association. Chart is for retail sales in individual outlets in the UK and Northern Ireland for the fortnight ended November 20

Top Ten programs for the ZX81

1	Scramble	Quicksilva (1)
2	1K Chess	Sinclair (4)
3	Fantasy Games	Sinclair (–)
4	Sabotage	Sinclair (5)
5	Espionage Island	Sinclair (–)
6	Chess	Sinclair (6)
7	Asteroids	Quicksilva (7)
8	Space Raiders	Sinclair (–)
9	Defender	Quicksilva (2)
10	Football Manager	Addictive (8)

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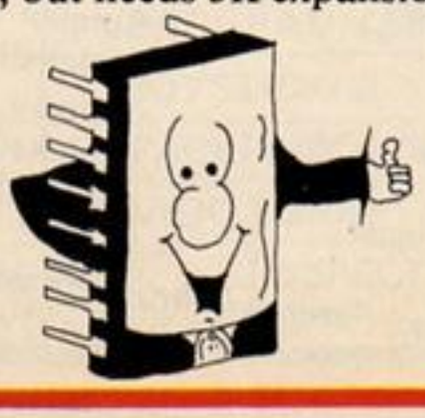

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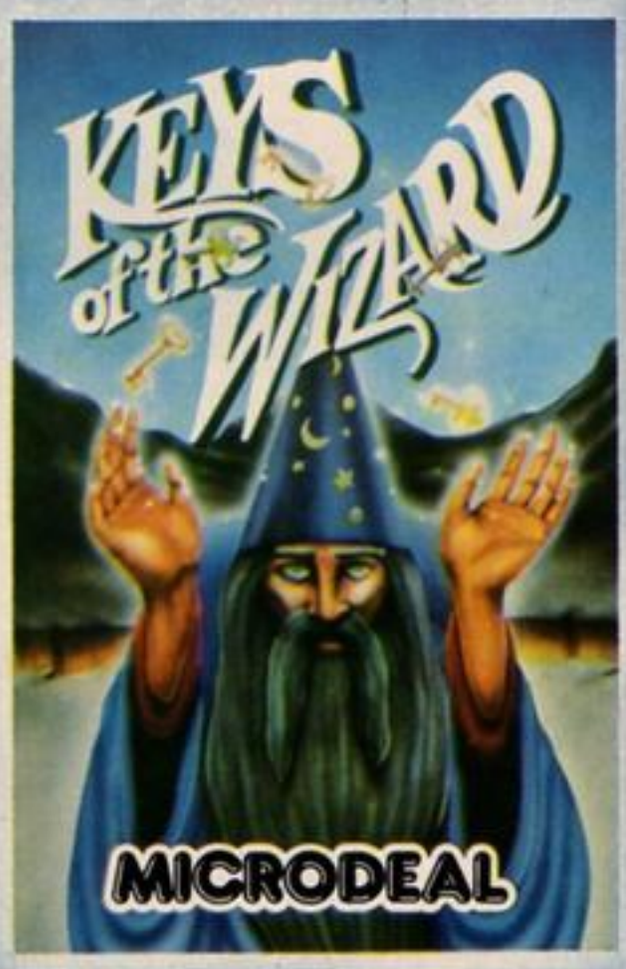

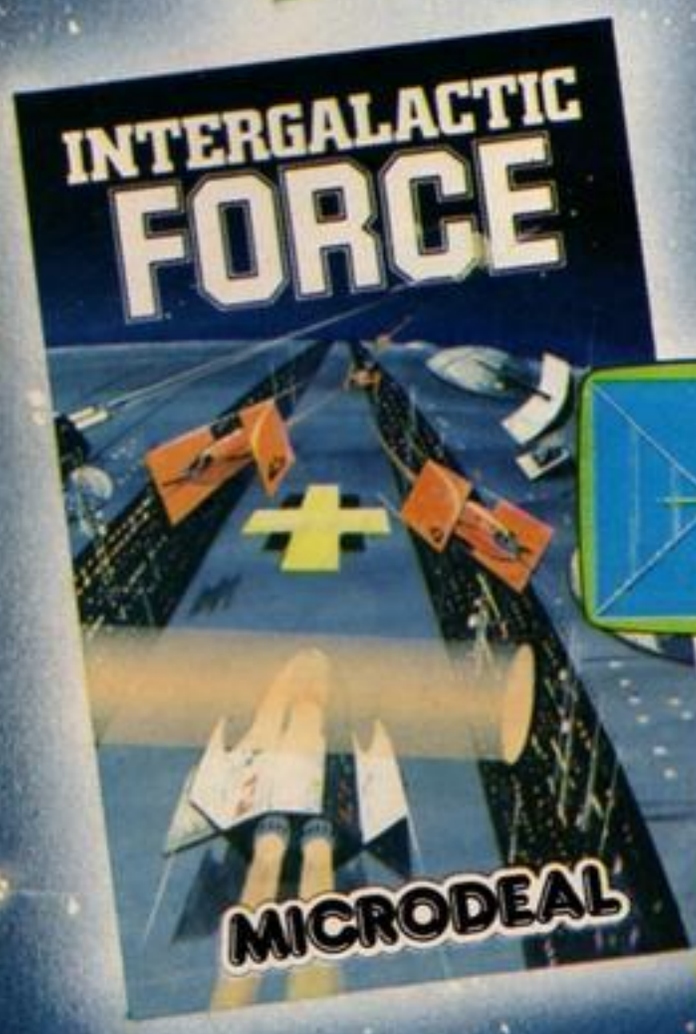

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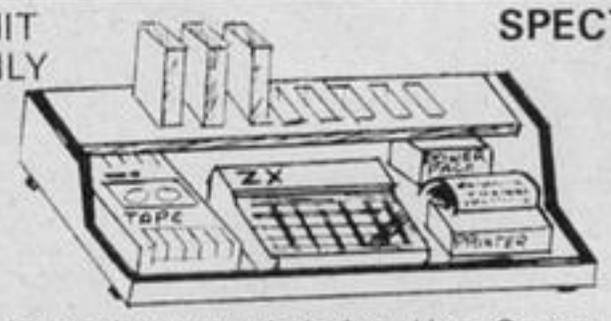

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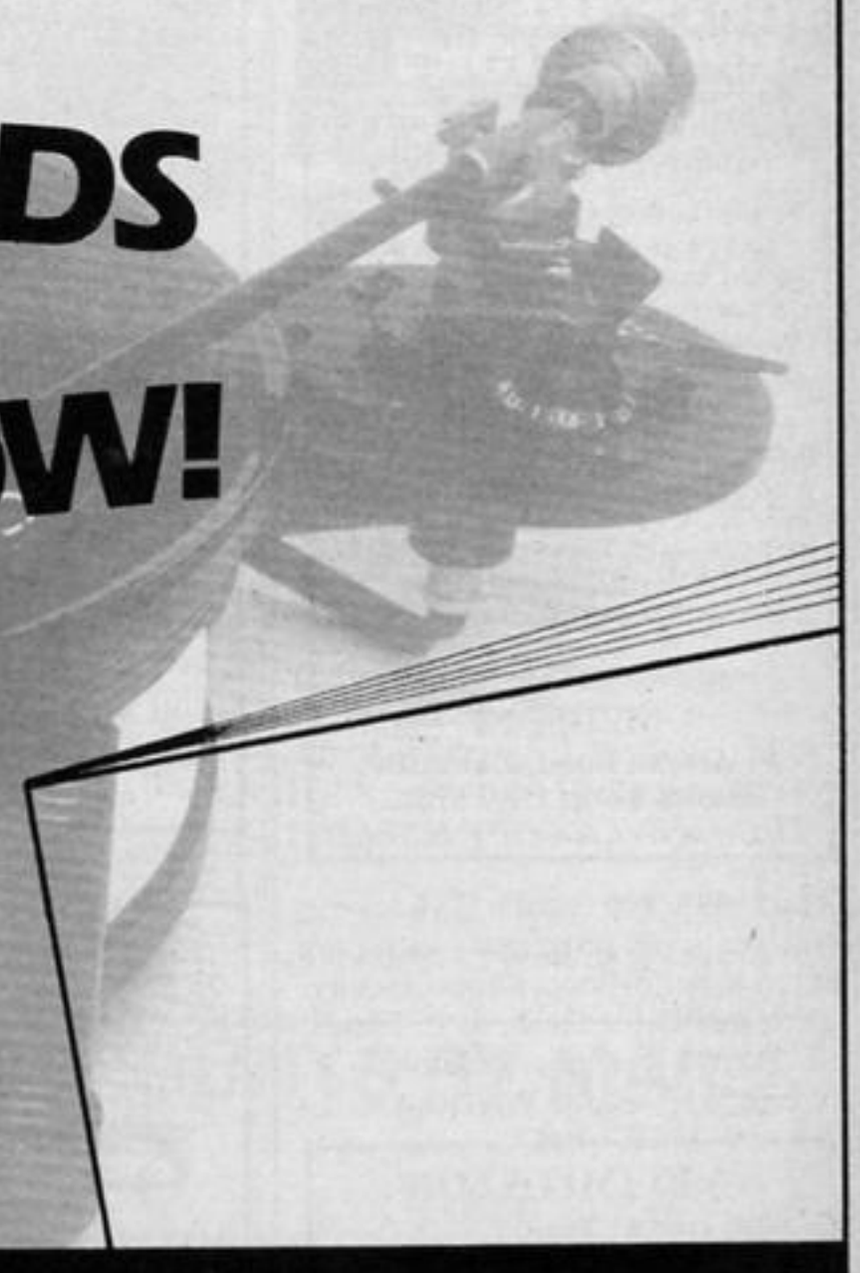

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First Dividends	Second Dividends	Third Dividends	Fourth Dividends	Fifth Dividends	Sixth Dividends
765	1,818	2,942	1,952	631	93

A GRAND TOTAL OF 8,201 (EIGHT THOUSAND, TWO HUNDRED AND ONE DIVIDENDS — so far).

I HOLD THE UNCHALLENGED WORLD'S RECORD FOR POOLS WINS

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Do not let anyone tell you that it is impossible to "WIN ON THE POOLS" — since I perfected my method, **I HAVE WON REGULARLY** for over **TWENTY-FIVE YEARS** — proof that it is no 'flash-in-the-pan'.

I have CHALLENGED THE WORLD with my record of wins and with all the evidence that I possess — NO ONE has ever been able to accept the Challenge — I KNOW NO ONE EVER WILL.

MY SECRET IS NOW PLACED ONTO COMPUTER CASSETTE FOR YOU.

THE METHOD IS THE GREATEST TREBLE CHANCE WINNER IN THE HISTORY OF FOOTBALL POOLS — IT WILL LAST FOREVER — BOTH FOR ENGLISH AND AUSTRALIAN FOOTBALL POOLS, WITH EQUAL SUCCESS.

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You will have noted details of my personal achievements so far, as given to you above.

A GRAND TOTAL of 8,201, yes 8,201 POOLS DIVIDENDS, including **765 FIRST DIVIDENDS.**

My Pools Winnings Dividend slips now number so many, that they fill a very large suitcase and will stand as my evidence of all claims in **ANY COURT OF LAW IN THE WHOLE WORLD.**

Taking just the past 25 years into consideration, I have won ON AVERAGE over 328, (THREE HUNDRED AND TWENTY—EIGHT) Pools Dividends **EVERY YEAR** — or — AN AVERAGE of over **SIX DIVIDENDS EVERY WEEK** for **TWENTY—FIVE YEARS.**

You have my absolute Guarantee of the complete authenticity of every claim, cheque, document, letter, etc, contained herein.

I do have losing weeks, but ON AVERAGE my winnings show over SIX DIVIDENDS **EVERY WEEK** for the past 25 years.

I know that you are now utterly flabbergasted, it always happens to everyone with whom I come into contact. Please just sit back and **imagine** for a moment my **FIRST DIVIDEND** wins alone — they now number 765 (seven hundred and sixty-five) and will probably be even more by the time this advertisement appears in print.

I AM NUMBER ONE IN THE WORLD AND NO ONE DISPUTES IT.

For as long as I continue to enter the Football Pools my wins will continue. I have already said, they apply, with equal success to both English and Australian Football Seasons.

I intend to release a STRICTLY LIMITED NUMBER of copies of my cassette, — DO NOT DELAY AND FIND YOU ARE TOO LATE, in which case I would have to refund your money.

I am so confident of **YOUR** success that if do **not** win at least THREE FIRST TREBLE CHANCE DIVIDENDS in the first 20 weeks of entering, I will completely cancel the balance of the purchase price and you do not have to pay me another penny, at any time, no matter how vast your winnings.

I only wish that space would allow me to give you photographs of my winnings slips, cancelled cheques, etc, but it is of course impossible — they now number 8,201 dividends. I have however given JUST A FEW EXTRACTS from ORIGINAL LETTERS I hold from my small Clientele.

I am the Inventor and Sole Proprietor of my method, Registered as EUREKA — ('I have found it'). I am known as The Professor in Pools Circles — I am of the Highest Rank in Forecasting — this is beyond dispute. I am marketing a limited number of Computer Cassettes, under my Registered Company — FOOTBALL ENTERPRISES.

My initial charge for a copy was £75, but for this SPECIAL REDUCED PRICE OFFER I will send you a copy, for £20, (twenty pounds) ONLY, plus your Promise to pay me the balance of £55 — ONLY IF YOU WIN AT LEAST THREE FIRST TREBLE CHANCE DIVIDENDS IN YOUR FIRST 20 WEEKS OF ENTERING — otherwise you owe me NOTHING FURTHER.

This is surely proof absolute of my supreme and utter confidence in my own abilities and in the capabilities of my discovery. I could easily CHARGE £2,000 per cassette on the evidence I possess, but that would not be fair to everyone, which is what I want to do.

My method is WORLD COPYWRIGHT, any infringement and immediate proceedings will be taken, without prior warning. It is truly ingenious and has stood the test of time.

My cassette is simplicity itself to operate and you'll be given FULL DETAILS for weekly calculating. Your entry need not involve you in any large weekly stakes, you can enter for as little as 25p, if you wish.

I charge NO COMMISSION on any of your wins — no matter how BIG they may be.

I realised a long time ago, that it was no good sitting down and **dreaming** about winning the pools, so I burnt the candle at both ends, working late into the night, occasionally RIGHT THROUGH THE NIGHT, I **KNEW** there was a way, eventually it all paid off and has been doing so ever since.

I am unable to vary my offer to anyone, so please do not request it, as I shall very easily dispose of the cassettes I have prepared and am making available.

IMMEDIATELY I perfected my method I commenced winning right away, (first with just a little £163, the first week I used it), I HAVE NEVER LOOKED BACK SINCE, amongst all those dividends was one for over **EIGHT THOUSAND POUNDS** for just **one eighth of a penny stake.**

I will release a copy on cassette, to you, on receipt of the completed order form and your Signature thereon, confirming you will treat it in the STRICTEST CONFIDENCE between us and retain it for your **OWN USE ONLY.**

PLEASE NOTE:
If you happen to be the proud owner of a Computer **other than** Sinclair Spectrum, you can still purchase a copy of my method, for the same price and program it YOURSELF on to YOUR OWN COMPUTER — or even if you do not have a computer.

Don't take my word for it, read what people write about me and my method:—

I won on Zetters last weekend. It was not a big sum, but all the same it was a very nice surprise for me. J.C., Lancs.

I appreciate the straightforward method you adopt, which is such a contrast to the rubbish of misrepresentation which is so common in the Betting World, by unscupulous and self-opinionated charlatans. C.H., Devon

Winnings cheque received today, sincere thanks. D.N., Devon

I congratulate you on your achievement. R.R., Wales

I should like to thank you for a most exciting season and look forward to hearing from you again. J.C., Hants.

I would like to acknowledge cheque and say how much I appreciate your integrity. J.M., Scotland

Many thanks for your system, it is all you say and more. J.C., Lancs.

Your wonderful system won me £3,527. I intend to visit London soon and will be able to come and see you personally. (Overseas Client). P.M., Kampala.

Many thanks for trying so hard to please us all, your brother should be thanked also. One of our daughters, WHOSE HUSBAND YOU HELPED ENORMOUSLY, has just phoned, the four of them have just spent a lovely holiday in Spain. K.R.,Isle of Man.

I sent in my FIRST entry last week and won 2nd and 3rd dividends, as you will see from the enclosed certificate. One more and I would have collected over £400 for FIRST dividend. Once I've won a fair amount I shall be staking from winnings and at 2p per line, A FIRST DIVIDEND last week at this would have been over £3,000. C.A., Yorks.

I am very interested indeed and enclose £20 herewith. I agree to pay you the balance of £55 **ONLY** if I win at least THREE FIRST TREBLE CHANCE DIVIDENDS in my first 20 weeks of entering — otherwise I owe you NOTHING FURTHER at any time — no matter how much money I win. My Signature below is my Undertaking to retain complete and absolute confidence about the method.

Name.....

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Signature ..... **HCW**

The Managing Director,
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Please tick if cassette is for:
Sinclair Spectrum (48K) ☐
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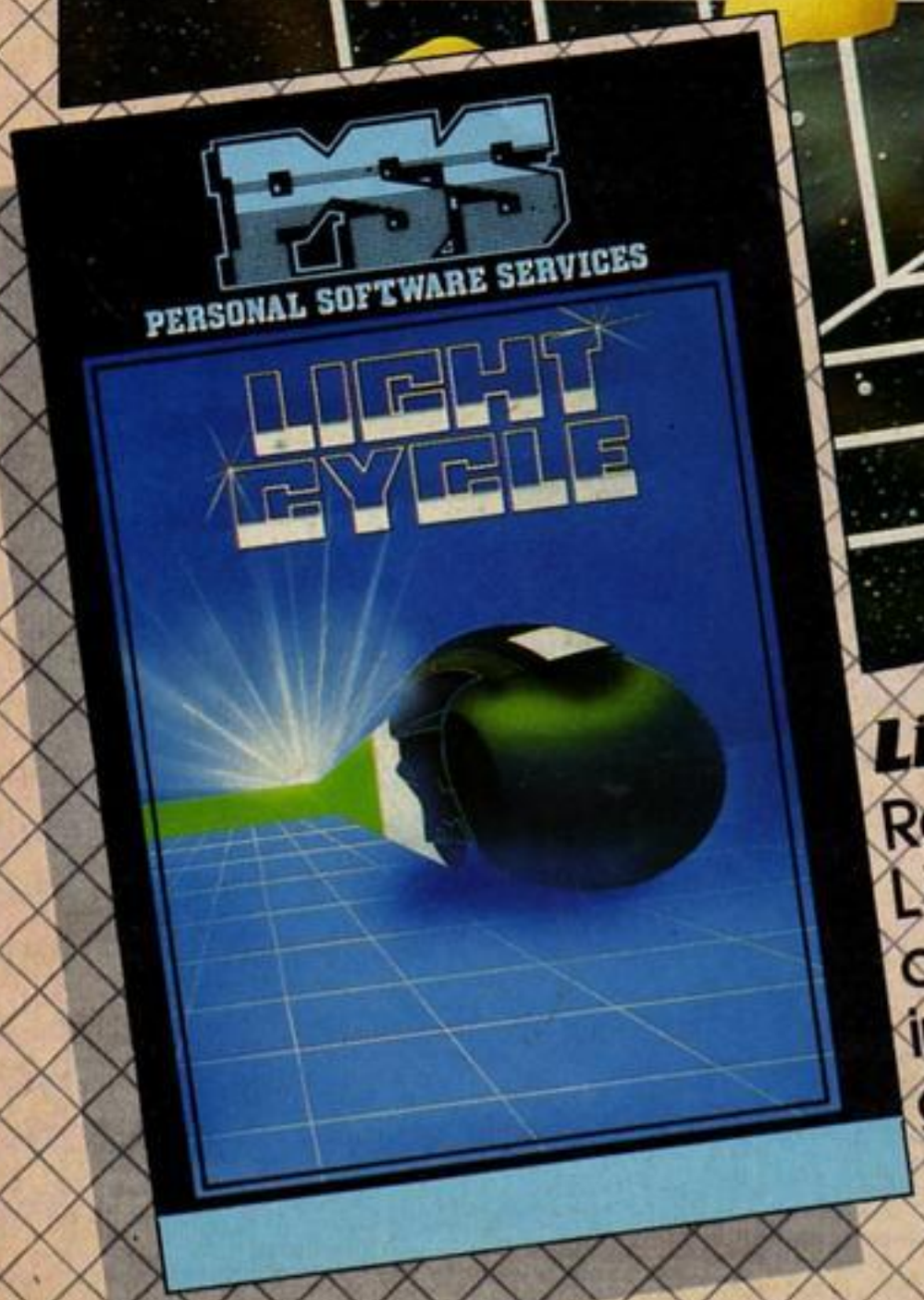

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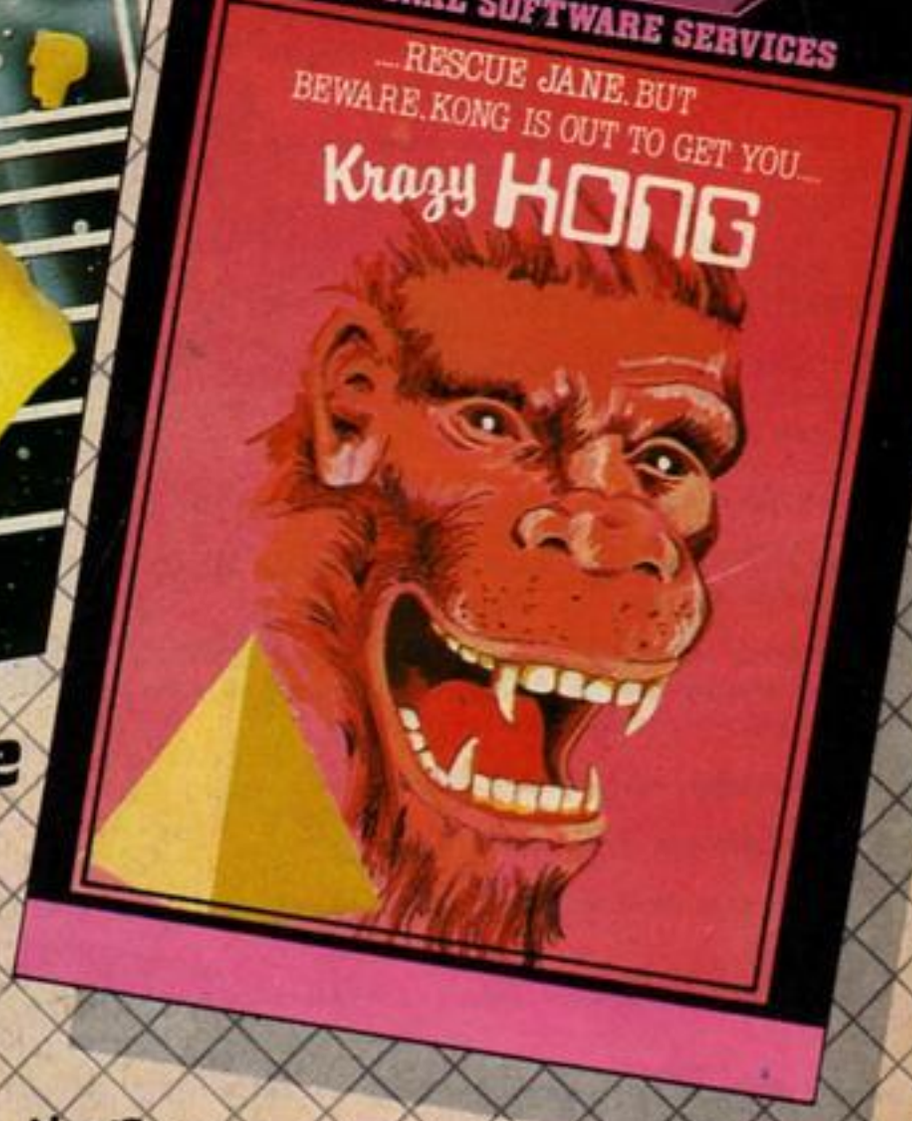

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